

**Dr. Mahalingam College of
Engineering and Technology**
(An Autonomous Institution)
Pollachi - 642 003

Curriculum and Syllabi

B.Tech Information Technology

Semesters I to IV

REGULATIONS 2019



Dr. Mahalingam College of Engineering and Technology, Pollachi – 642003.
(An autonomous institution approved by AICTE and affiliated to Anna University)

Department of Information Technology

Vision:

To become a Centre of Excellence in education and research in the field of Information Technology, to meet global challenges in computing industries

Mission:

- To impart world-class knowledge in the field of Information Technology
- To promote industry-institute interactions to empower the faculty members and students
- To support and facilitate research and development activities
- To develop all round personality by inculcating the values and skills needed for students to upgrade themselves as IT professionals


OBE Coordinator


Programme Coordinator


Head of the Department

Head - OBE

Programme: B.Tech. Information Technology

Programme Educational Objectives (PEOs) - Regulations 2019

B.Tech. Information Technology graduates will:

PEO 1. Technical Expertise: Have high level of technical competency to identify problems and to generate innovative solutions, which would conform to the needs of IT industry

PEO 2. Lifelong learning: Successfully adapt to changes in roles and responsibilities, through lifelong learning, for collaborating professionally with various stakeholders

PEO 3. Ethical Knowledge: Ethically apply their computing knowledge and skills considering societal, economic and environmental factors

Programme Outcomes (POs) - Regulations 2019

On successful completion of B.Tech. Information Technology programme, graduating students/graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions


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PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

Programme Specific Outcomes (PSOs) - Regulations 2019

PSO1. Open source software: Develop customized solutions for real world problems using open source software

PSO2. Data science: Manage, store, retrieve and analyze the voluminous data efficiently


OBE Coordinator


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Head of the Department

Head - OBE

**Programme: B.Tech Information Technology
 2019 Regulations
 Curriculum for Semesters I to II**

Course Code	Course Title	Duration	Credits	Marks
19SHMG6101	Induction Program	3 Weeks	-	100

Semester I (2019 Batch)

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABC1102	Linear Algebra and Infinite Series	3	1	0	4	100	CS & IT
19ENHG2101	Communication Skills - I	2	0	2	3	100	All
19CHBC2101	Chemistry for Information Sciences	3	0	2	4	100	CS & IT
19EESC2101	Introduction to Electrical and Electronics Engineering	3	0	2	4	100	CS & IT
19ITSN2101	Problem Solving using C	3	0	3	4.5	100	-
19PSHG3002	Personal Effectiveness	0	0	2	1	100	All
Total		14	1	11	20.5	600	

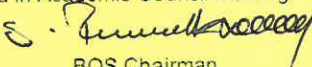
Semester II (2019 Batch)

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABC1202	Calculus and Transforms	3	1	0	4	100	CS & IT
19ENHG2201	Communication Skills - II	2	0	2	3	100	All
19PHBC2201	Physics for Information Sciences	3	0	2	4	100	CS & IT
19ECSC2201	Digital System Design	2	0	2	3	100	CS & IT
19ITSN2201	Data Structures using C	3	0	3	4.5	100	-
19MESC4001	Engineering Drawing	1	0	3	2.5	100	AU,CS,EC,EI, IT ME,MC,PR
19PSHG3001	Wellness for students	0	0	2	1	100	All
19CHMG6201	Environmental Sciences	1	0	0	-	100	All
Total		15	1	14	22	800	

Passed in Board of Studies meeting


 BOS Convener

Approved in Academic Council meeting


 BOS Chairman

Programme: B.Tech Information Technology
2019 Regulations
Curriculum for Semesters I to IV

Course Code	Course Title	Duration	Credits	Marks
19SHMG6101	Induction Program	3 Weeks	-	100

Semester I (2020 Batch)

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABC1102	Linear Algebra and Infinite Series	3	1	0	4	100	CS & IT
19ENHG2101	Communication Skills – I	2	0	2	3	100	All
19PHBC2002	Physics for Information Sciences	3	0	2	4	100	CS & IT
19EESC2101	Introduction to Electrical and Electronics Engineering	3	0	2	4	100	CS & IT
19ITSN2101	Problem Solving using C	3	0	3	4.5	100	-
19PSHG6001	Wellness for students	0	0	2	-	-	All
Total		14	1	11	19.5	500	

Semester II (2020 Batch)

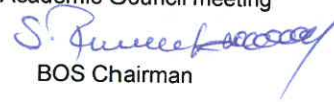
Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABC1202	Calculus and Transforms	3	1	0	4	100	CS & IT
19ENHG2201	Communication Skills – II	2	0	2	3	100	All
19ECSC2201	Digital System Design	2	0	2	3	100	CS & IT
19ITSN2201	Data Structures using C	3	0	3	4.5	100	-
19MESC4001	Engineering Drawing	1	0	3	2.5	100	AU,CS,EC,EI, IT ME,MC,PR
19CSSC4001	IT Practices Lab	1	0	4	3	100	CS & IT
19PSHG6001	Wellness for students	0	0	2	1	100	All
19CHMG6201	Environmental Sciences	1	0	0	-	100	All
Total		13	1	16	21	800	

* Annual Pattern

Passed in Board of Studies meeting


 BOS Convener

Approved in Academic Council meeting


 BOS Chairman

Semester III

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABC1303	Discrete Mathematics	3	1	0	4	100	CS & IT
19ITCN1301	Design and Analysis of Algorithms	4	0	0	4	100	-
19ITCN1302	Object Oriented Programming using Java	3	0	0	3	100	-
19ITSN2301	Computer Organization and Microprocessor	3	0	2	4	100	-
19ITCN2301	Software Engineering	3	0	2	4	100	-
19ITCN3301	Design and Analysis of Algorithms Laboratory	0	0	3	1.5	100	-
19ITCN3302	Object Oriented Programming using Java Laboratory	0	0	3	1.5	100	-
XXXXXXXXXX	One Credit Course	0	0	2	1	100	
Total		16	1	12	23	800	


Semester IV

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABG1401	Probability and Statistics	3	1	0	4	100	All
19ITCN1401	Operating System	3	0	0	3	100	-
19ITCN2401	Computer Networks	3	0	2	4	100	-
19ITCN2402	Database Management Systems	3	0	3	4.5	100	-
19ITCN4401	Programming with Python Laboratory	1	0	3	2.5	100	-
19ITPN6401	Mini – Project	0	0	4	2	100	-
19PSHG6002	Universal Human Values 2 : Understanding Harmony	2	1	0	3	100	All
XXXXXXXXXX	One Credit Course	0	0	2	1	100	-
Total		15	2	14	24	800	

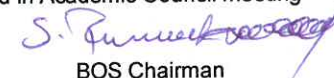
Course Code	Course Title	Duration	Credits	Marks
19ITPN6001	Internship or Skill Development*	2 Weeks	1	100

*Refer to clause: 4.8 in UG academic regulations 2019

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Approved in Academic Council meeting


BOS Chairman

Tentative Curriculum for Semesters V to VIII

Semester V

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
	Theory of Computation	3	1	0	4	100	-
	Web Technology	3	0	0	3	100	-
	Cryptography and Network Security	3	0	2	4	100	-
	Professional Elective - I	3	0	2	4	100	-
	Professional Elective – II(Online)**	3	0	0	3	100	-
	Open Elective - I	3	0	0	3	100	-
	Web Technology Laboratory	0	0	3	1.5	100	-
	Mobile Programming Laboratory	1	0	3	2.5	100	-
	Employability Skills - I	0	0	2	1	100	All
Total		19	1	12	26	900	

Semester VI

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
	Data Mining and Machine Learning	3	0	0	3	100	-
	Internet of Things	3	0	2	4	100	-
	Professional Elective - III	3	0	2	4	100	-
	Professional Elective – IV(Online)**	3	0	0	3	100	-
	Open Elective – II	3	0	0	3	100	-
	Data Mining and Machine Learning Laboratory	0	0	3	1.5	100	-
	Innovative and Creative Project	0	0	4	2	100	-
	Employability Skills - II	0	0	2	1	100	All
Total		15	0	13	21.5	800	

Course Code	Course Title	Duration	Credits	Marks
	Internship or Skill Development*	2 or 4 Weeks	1	100

*Refer to clause: 4.8 in UG academic regulations 2019

** can be chosen from Nptel/Swayam as per the regulations

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Jai
BOS Convener

Approved in Academic Council meeting

S. P. ...
BOS Chairman

Semester VII

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
	Cloud Computing	3	0	0	3	100	-
	Artificial Intelligence	3	0	2	4	100	-
	Professional Elective - V	3	0	0	3	100	-
	Professional Elective - VI	3	0	0	3	100	-
	Open Elective - III	3	0	0	3	100	-
	Cloud Computing Laboratory	0	0	3	1.5	100	-
	Data Science Laboratory	1	0	3	2.5	100	-
Total		16	0	8	20	700	-

Semester VIII

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
	Project	0	0	16	8	200	-
Total		0	0	16	8	200	

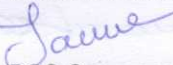
Course Code	Course Title	Duration	Credits	Marks
	Internship or Skill Development*	8 or 16 weeks	4	100

*Refer to clause: 4.8 in UG academic regulations 2019

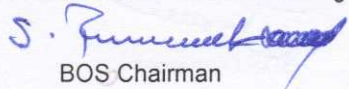
Total Credits (2019 Batch only): 171

Total Credits (2020 Batch onwards): 169

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Professional Electives

Course Code	Course Title	Hours / Week			Credits	Marks	Common to Programmes
		L	T	P			
Semester V							
	Object Oriented Analysis and Design	3	0	2	4	100	-
	Developing Web Applications using .NET	3	0	2	4	100	-
	PHP and MySQL	3	0	2	4	100	-
	Linux System Administration and Programming	3	0	2	4	100	-
	Distributed Databases	3	0	2	4	100	-
	R Programming	3	0	2	4	100	-
	Advanced Java Programming	3	0	2	4	100	-
	Arduino Programming	3	0	2	4	100	-
	Embedded System Programming	3	0	2	4	100	-
Semester VI							
	Responsive Web Design	3	0	2	4	100	-
	Angular JS	3	0	2	4	100	-
	XML and Web services	3	0	2	4	100	-
	Machine Learning with Python	3	0	2	4	100	-
	Game Programming	3	0	2	4	100	-
	Block Chain Technologies	3	0	2	4	100	-
	Malware Analysis	3	0	2	4	100	-
	Quantum Computing	3	0	2	4	100	-
	Cyber Physical Systems	3	0	2	4	100	-
	Cyber Security	3	0	2	4	100	-
	System Security	3	0	2	4	100	-

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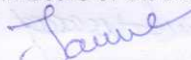
Jane
BOS Convener

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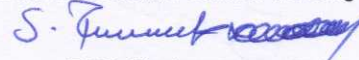
S. J. J. J.
BOS Chairman

Semester VII							
	Mobile Communication	3	0	0	3	100	-
	TCP/IP Protocols	3	0	0	3	100	-
	Information Storage and Management	3	0	0	3	100	-
	Wireless Sensor Networks	3	0	0	3	100	-
	Digital Signal Processing	3	0	0	3	100	-
	Digital Image Processing	3	0	0	3	100	-
	Distributed Computing	3	0	0	3	100	-
	Big Data & Analytics	3	0	0	3	100	-
	Business Intelligence and its Application	3	0	0	3	100	-
	Building Enterprise Applications	3	0	0	3	100	-
	Natural Language Processing	3	0	0	3	100	-
	Soft Computing	3	0	0	3	100	-
	Human Computer Interaction	3	0	0	3	100	-
	Service Oriented Architecture	3	0	0	3	100	-
	Advanced Problem Solving using C	3	0	0	3	100	-
	Advanced Problem Solving using Java	3	0	0	3	100	-
	Advanced Problem Solving using Python	3	0	0	3	100	-
	Robotic Process Automation	3	0	0	3	100	-
	Augmented Reality and Virtual Reality	3	0	0	3	100	-
	Software Project Management	3	0	0	3	100	-
	Agile Software Development	3	0	0	3	100	-
	Software Quality and Testing	3	0	0	3	100	-
	Principles of Management	3	0	0	3	100	-
	Information Security	3	0	0	3	100	-
	Total Quality Management	3	0	0	3	100	-
	Engineering Economics and Financial Management	3	0	0	3	100	-

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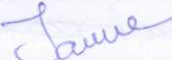

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BOS Chairman

	Professional Ethics	3	0	0	3	100	-
	Numerical Methods	3	0	0	3	100	-
	Resource Management Techniques	3	0	0	3	100	-
	Graph Theory	3	0	0	3	100	-
	Algebra and Number Theory	3	0	0	3	100	-

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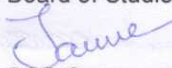
Approved in Academic Council meeting


BOS Chairman

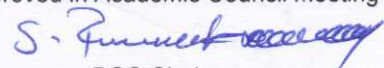
Open Electives

Course Code	Course Title	Hours / week			Credits	Marks
		L	T	P		
	Open Source Technologies	3	0	0	3	100
	Enterprise Resource Planning	3	0	0	3	100
	Multimedia Systems and Applications	3	0	0	3	100
	Cyber Law and Information Security	3	0	0	3	100
	E-Commerce	3	0	0	3	100
	User Interface Design	3	0	0	3	100
	Disaster Management	3	0	0	3	100
	Software Modeling-Principles and Practices	3	0	0	3	100

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BOS Chairman

Regulations 2019

Detailed Syllabi for Semesters I to IV

Course Code: 19SHMG6101	Course Title: Induction Program (common to all B.E/B.Tech programmes)
Course Category: Mandatory Non-Credit Course	Course Level: Introductory
Duration: 3 Weeks	Max. Marks:100

Pre-requisites

➤ Nil

Course Objectives

The course is intended to:

1. Explain various sources available to meet the needs of self, such as personal items and learning resources
2. Explain various career opportunities, opportunity for growth of self and avenues available in the campus
3. Explain the opportunity available for professional development
4. Build universal human values and bonding amongst all the inmates of the campus and society

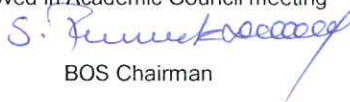
List of Activities

1. History of Institution and Management: Overview on NIA Education Institutions-Growth of MCET – Examination Process-OBE Practices – Code of Conduct – Centre of Excellence
2. Lectures by Eminent People, Motivational Talk – Alumni, Employer
3. Familiarization to Dept./Branch: HoD Interaction – Senior Interaction – Department Association
4. Universal Human Value Modules: Module 1, Module 2, Module 3 and Module 4
5. Orientation on Professional Skill Courses
6. Proficiency Modules – Mathematics, English, Physics and Chemistry
7. Introduction to various Chapters, Cell, Clubs and its events
8. Creative Arts: Painting, Music and Dance
9. Physical Activity: Games and Sports, Yoga and Gardening
10. Group Visits: Visit to Local areas and Campus Tour

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BOS Chairman

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Explain various sources available to meet the needs of self, such as personal items and learning resources through visit to local areas and campus	Understand
CO2: Explain various career opportunities and avenues available in the campus through orientation sessions	Understand
CO3: Explain the opportunity available for professional development through professional skills, curricular, co-curricular and extracurricular activities	Understand
CO4: Build universal human values and bonding amongst all the inmates of the campus and society for having a better life	Apply

Course Articulation Matrix

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	2	1	2	-	-	-	-
CO2	1	-	-	-	-	-	-	2	1	2	-	-	-	-
CO3	1	-	-	-	-	-	-	2	1	2	-	-	-	-
CO4	2	-	-	-	-	-	-	2	1	2	-	-	-	-

Assessment Pattern

Component	Marks	Details
Attendance	10	Minimum 80% and 1 mark for every 2% observed
Knowledge Test	40	Objective type questions
Work plan for future	50	Career plan developed consulting mentor
Total	100	


Non-letter Grades

Marks Scored	Performance Level
70 & above	Good
30 – 69	Average
< 30	Fair

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BOS Chairman

Unit IV Eigen Values and Eigen Vectors**9+3 Hours**

Eigen values and vectors-symmetric, skew symmetric and orthogonal matrices- Diagonalization of symmetric matrices through orthogonal transformation- reduction of quadratic forms to canonical form-rank ,index, signature nature of quadratic forms-Singular Value decomposition.

Unit V Sequences and Series**9+3 Hours**

Sequences-definitions and examples- Series-Tests for convergence-comparison test, integral test, Cauchy's root test, Alembert's ratio test- Alternating series –Leibnitz's test.

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1. Solve system of equations using echelon forms	Apply
CO2. Apply the properties of vector spaces	Apply
CO3. Determine orthogonal set of vectors using Gram Schmidt orthogonal process	Apply
CO4. Determine the canonical form of a quadratic form using orthogonal transformation	Apply
CO5. Use different testing methods to check the convergence of infinite series	Apply

Text Book(s):

- T1. Erwin Kreyszig, "Advanced Engineering Mathematics", 10th Edition, John Wiley & sons, 2010.
- T2. David C Lay, "Linear Algebra and its Applications", 3rd Edition, Pearson India, 2011.
- T3. Howard Anton, Chris Rorres, "Elementary Linear Algebra Applications version", 9th Edition, Wiley India Publications, 2011.

Reference Book(s):

- R1. Veerarajan, "Engineering Mathematics for first year", Tata McGraw-Hill, New Delhi,2008.
- R2. V.Krsihnamurthy, V.P.mainra and J. L. Arora, "An introduction to Linear Algebra", Affiliated East-West press, Reprint 2005.

Web References:

1. <https://nptel.ac.in/downloads/111102011/>

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Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO2	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO3	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO4	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO5	2	-	-	-	-	-	-	2	2	3	-	2	-	-

High-3; Medium-2; Low-1


Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Assessment	CCET 1	1,2	50	30
	CCET 2	3,4	50	
	CCET 3	5	50	
	Tutorial	1,2,3,4,5	30	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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BOS Chairman

Course Code: 19ENHG2101	Course Title: Communication Skills – I (common to all B.E/B.Tech programmes)		
Course Category: Humanities		Course Level: Introductory	
L:T:P(Hours/Week) 2: 0: 2	Credits:3	Total Contact Hours:60	Max. Marks:100

Pre-requisites

- The student should have undergone English as his/her first or second language in school

Course Objectives

The course is intended to:

1. Listen and understand monologues and dialogues of a native speaker on par with B1 of CEFR level
2. Speak in simple sentences to convey their opinions and ideas on par with B1 of CEFR level
3. Read and infer a given text on par with B1 of CEFR level
4. Draft basic formal written communication on par with B1 of CEFR level

Unit I **Listening**

15 Hours

Importance of active listening – Physical condition needed for active listening-Identifying relevant points while taking notes.- Framing questions at different linguistic contexts - Listening for specific details of concrete monologues and dialogues – Listening to organize ideas - Developing ideas – Listening to compose paragraphs – Paraphrasing the aural input.

Unit II **Speaking**

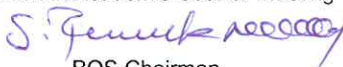
15 Hours

Importance of note making to practice speaking - Traditional note making, developing Mind map - Collecting points from various sources - Identifying relevant ideas needed for the speech -Using mind-map to organize thought processing - Prioritizing the ideas - Types of sentences - Frequently used words (Institution, home and leisure) - Mother Tongue Influence - Expressing the thoughts in simple sentences - Tenses & Voices (Active & Passive) - Postures, gestures and eye contact - Intonation and Sentence stress - Express one's thoughts coherently.

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Unit III Reading**15 Hours**

Reading strategies - Skimming -Scanning - Interpretation of visual data - Factual texts on subjects of relevance - Inferring texts – Reading to write a review – Checking the accuracy of reading while presenting the interpreted data – Reading to comprehend.

Unit IV Writing**15 Hours**

Writing Simple and short sentences - Writing E-mail, Memo, Note and Message - Letter Writing - Importance of punctuations -- Identifying the main points - Organising the main ideas - Writing a draft.

List of Tasks

1. BEC Preliminary Listening Test-I & Speaking Test-1
2. BEC Preliminary Listening Test-2 & Speaking Test-2
3. BEC Preliminary Listening Test-3 & Speaking Test-3
4. BEC Preliminary Listening Test-4 & Speaking Test-4
5. BEC Preliminary Listening Test-5 & Speaking Test-5
6. BEC Preliminary Listening Test-6 & Speaking Test-6

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Listen actively and paraphrase simple messages and specific details of concrete monologues and dialogues	Apply
CO2: Express one's views coherently in a simple manner	Apply
CO3: Read and comprehend factual texts on subjects of relevance	Understand
CO4: Write texts bearing direct meanings for different contexts maintaining an appropriate style	Apply

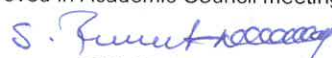
Text Book(s):

- T1. Whitby Norman, "Business Benchmark Pre-intermediate to Intermediate Students' Book", 2nd Edition, CUP Publications , 2014.
- T2. Wood Ian, Williams Anne, Cowper Anna, "Pass Cambridge BEC Preliminary", 2nd Edition, Cengage Learning, 2015.
- T3. Learners Book prepared by the Faculty members of Department of English.

Passed in Board of Studies meeting


 BOS Convener

Approved in Academic Council meeting


 BOS Chairman

Reference Book(s):

- R1. BEC-Preliminary - Cambridge Handbook for Language Teachers, 2nd Edition, CUP 2000.
 R2. Hewings Martin - Advanced Grammar in use - Upper-intermediate Proficiency, 3rd Edition, CUP, 2013.

Web References:

1. <http://www.grammarinenglish.com> -Jan 23, 2018
2. https://www.northshore.edu/support_centre/pdf/listen-notes.pdf
3. http://www.examenglish.com/BEC/BEC_Vantage.html - Jan 23, 2018

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	-	2	3	-	-	-	-
CO2	2	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	1	-	-	-	-	-	-	1	-	3	-	-	-	-
CO4	2	-	-	-	-	-	-	1	-	3	-	-	-	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	2,3,4	50	20
	CCET II	2,3,4	50	
	CCET III	2,3,4	50	
	Continuous Assessment – Practical	1,2	75	10
	Final Assessment – Practical	1,2	50	10
End Semester Examination	ESE	2,3,4	100	60
			Total	100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19CHBC2101	Course Title: Chemistry for Information Sciences (Common to IT & CS) (2019 Batch Only)		
Course Category: Basic Science		Course Level: Introductory	
L:T:P(Hours/Week) 3: 0: 2	Credits:4	Total Contact Hours:75	Max. Marks:100

Pre-requisites

- Higher Secondary Chemistry I and II

Course Objectives

The course is intended to:

1. Explain the principles of electrochemistry, batteries and fuel cells
2. Explain the mechanism of corrosion and corrosion control
3. Describe the preparation, properties and applications of engineering plastics
4. Explain the chemistry of water and water conditioning methods
5. Describe synthesis, properties and applications of nanomaterials

Unit I Electrochemistry and Batteries

9 Hours

Cells – Types of cells– galvanic and electrolytic cells – emf and its measurement – Nernst equation –Batteries – types and Characteristics, Construction, working and applications - Alkaline battery, Lead –Acid battery, Nickel-Cadmium battery, Lithium ion battery, Hydrogen Oxygen fuel cells.

Unit II Corrosion and its Control

9 Hours

Corrosion – dry and wet corrosion – mechanism of electrochemical corrosion – galvanic corrosion and concentration cell corrosion, Factors influencing corrosion. Corrosion Control methods – Cathodic protection methods, Metallic coating – Galvanizing, Tinning – Chrome plating and Electroless plating of Nickel.

Unit III Polymers, Plastics and Composites

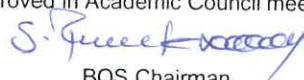
9 Hours

Polymers–definition-polymerization-types-addition and condensation polymerization-classification – Terminologies – Plastics – Classification, Engineering plastics (PVC, Teflon, Polycarbonates, Polyurethanes, PET) – preparation, properties and uses, Compounding of plastics – Moulding technique – blow and extrusion. Polymer composites – FRP and ceramic matrix composites.

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BOS Chairman

Unit IV Water Technology**9 Hours**

Water quality parameters—Types of water- Hardness of water – Types, expression, units, problems - determination of hardness by EDTA method – Boiler feed water- boiler troubles(scale, sludge, priming, foaming, caustic embrittlement, Boiler corrosion)- Water conditioning methods – Internal conditioning –phosphate , calgon and sodium aluminate conditioning, External conditioning – demineralization, Desalination of brackish water-reverse osmosis process.

Unit V Synthesis and Applications of Nano Materials**9 Hours**

Introduction – Difference between bulk and Nano materials – size dependent properties. Nano scale materials –particles, clusters, rods and tubes. Synthesis of Nanomaterials: Sol-gel process, Electro deposition, Hydrothermal methods. Applications of Nano materials in Electronics, Energy science and medicines. Risk and future perspectives of nano materials.

List of Experiments**30 Hours**

1. Determination of Dissolved Oxygen in water by Winkler's method
2. Determination of strength of strong acid by conductance measurement
3. Estimation of Fe^{2+} by potentiometric titration
4. Determination of corrosion rate by weight loss method
5. Estimation of hardness of water by EDTA method
6. Determination of molecular weight of polymer by viscometric method

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BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1. Explain batteries based on their characteristics, construction, working principle and applications	Understand
CO2. Explain the mechanism of corrosion and its control techniques	Understand
CO3. Identify a suitable plastic for a specific engineering application	Understand
CO4: Calculate hardness of water based on water quality parameters associated with water conditioning methods	Apply
CO5: Describe synthesis, properties and applications of nanomaterials	Understand

Text Book(s):

T1. Jain & Jain, "Engineering Chemistry (All India)", 17th Edition, Dhanpat Rai Publishing Company(P) Ltd, New Delhi, 2018.

T2. Wiley, "Engineering Chemistry", 2nd Edition, Wiley India Pvt. Ltd. New Delhi, 2011.

Reference Book(s):

R1. Larry Brown and Tom Holme, "Chemistry for Engineering Students", 3rd Edition, Cengage Learning, 2010.

R2. S. S. Dara, "A text book of Engineering Chemistry", S. Chand & Co. Ltd., New Delhi, 2006.

R3. Charles P. Poole, Jr., Frank J. Owens, "Introduction to Nanotechnology", Wiley India Pvt. Ltd. New Delhi, 2003.

R4. V.R.Gowariker, N.V.Viswanathan and Jayadev Sreedhar, "Polymer Science", New Age International(P) Ltd, Chennai, 2006.

Web References:

1. <http://nptel.ac.in/courses/122101001/downloads/lec.23.pdf>

2. <http://nptel.ac.in/courses/118104004/>

3. <http://nptel.ac.in/courses/104105039/>

Passed in Board of Studies meeting


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BOS Chairman

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO2	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO4	2	-	-	-	-	-	-	1	2	3	-	-	-	-
CO5	1	-	-	-	-	-	-	1	-	1	-	-	-	-

High-3; Medium-2;Low-1

Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment – Practical	1,2,3,4,5	75	10
	Final Assessment – Practical	1,2,3,4,5	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

Passed in Board of Studies meeting


BOS Convener

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BOS Chairman

Text Book(s):

- T1. M. N. Avadhanulu and P. G. Kshirsagar, "Text Book of Engineering Physics", S. Chand & Company Ltd., New Delhi, 2018.
- T2. David Armitage, "Introduction to Micro displays", John Wiley & Ltd, 2006.
- T3. D.Roy Choudhry, Shail Jain, "Linear Integrated Circuits", 3rd Edition ,New Age International Pvt. Ltd, 2010.

Reference Book(s):

- R1. D. Halliday., R. Resnick and J. Walker, "Fundamentals of Physics", 10th Edition, Wiley Publications, 2014.
- R2. Ajoy Ghatak, "Optics", 5th Edition, Tata McGraw-Hill Education, New Delhi, 2012.
- R3. A. Marikani, "Engineering Physics", 2nd Edition, PHI Learning, New Delhi, 2014.

Web References:

1. https://onlinecourses.nptel.ac.in/noc17_cy07/preview
2. https://onlinecourses.nptel.ac.in/noc17_ph01/preview
3. <http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>

Course Articulation Matrix

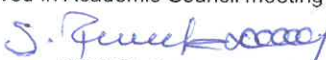
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO2	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO4	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO5	1	-	-	-	-	-	-	1	2	3	-	-	-	-

High-3; Medium-2; Low-1

Passed in Board of Studies meeting


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Approved in Academic Council meeting


BOS Chairman

Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment – Practical	1,2,3,4,5	75	10
	Final Assessment – Practical	1,2,3,4,5	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code:19EESC2101		Course Title: Introduction to Electrical and Electronics Engineering (common to CS & IT)	
Course Category: Engineering Science		Course Level: Introductory	
L:T:P (Hours/Week) 3: 0: 2	Credits:4	Total Contact Hours:75	Max. Marks:100

Pre-requisites

➤ Nil

Course Objectives

The course is intended to:

1. Explain basics of DC Circuits
2. Explain the fundamentals of AC Circuits
3. Describe the basic electrical machines
4. Summarize the semiconductor devices
5. Outline the display devices and transducers
6. Utilize carpentry and Piping methods

Unit I Fundamentals of DC Circuits

9 Hours

Definition, symbol and unit of quantities – Active and Passive elements – Ohm's Law: statement, illustration and limitation – Kirchhoff's Laws: statement and illustration – Resistance in series and voltage division rule – Resistance in parallel and current division rule– Method of solving a circuit by Kirchhoff's laws – Star to Delta and Delta to Star transformation.

Unit II AC Fundamentals

9 Hours

Magnetic Circuits: Definition of magnetic quantities – Law of electromagnetic induction – Generation of single phase alternating EMF – Terminology – 3 Phase System: 3-Wire and 4 Wire system – Root Mean Square (RMS) – Average value of AC – Phasor representation of alternating quantities – Pure Resistive, Inductive and Capacitive circuits.

Unit III Electrical Machines

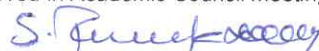
9 Hours

DC Generator and DC Motor: Construction, Working Principle, Characteristics of shunt and series motor – Single phase transformer: Construction, working principle - Three phase and Capacitor start and run single phase induction motor: Construction and Working Principle.

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BOS Chairman

Unit IV Semiconductor Devices**9 Hours**

Theory of Semiconductor: PN junction diode, Forward Bias Conduction, Reverse Bias Conduction, V-I Characteristics – Bipolar Junction Transistor: Operation of NPN and PNP Transistor, Common Emitter Configuration – Field Effect Transistor & MOSFET: construction and working principle.

Unit V Display Devices and Transducers**9 Hours**

Opto-Electronic Devices: Working principle of Photoconductive Cell, Photovoltaic Cell-solar cell
 Display Devices: Light Emitting Diode (LED) – Liquid Crystal Display (LCD) – Transducers: Capacitive and Inductive Transducer, Thermistors, Piezoelectric and Photoelectric Transducer.

List of Experiments**30 Hours****[A] Electrical & Electronics**

1. Identification of resistor and capacitor values
2. Soldering practice of simple circuit and checking the continuity
3. Fluorescent tube, staircase, house wiring and need for earthing

[B] Civil & Mechanical

1. Make a wooden Tee joint to the required dimension
2. Make a tray in sheet metal to the required dimension
3. Assemble the pipeline connections with different joining components for the given layout

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Explain basic laws and simplification techniques in electrical engineering using DC Circuits	Understand
CO2: Explain the fundamentals and basic principles of AC Circuits	Understand
CO3: Describe the principles of basic electrical machines	Understand
CO4: Summarize the working of semiconductor devices	Understand
CO5: Outline the features of display devices and transducers	Understand
CO6: Utilize Carpentry and Piping methods	Apply

Passed in Board of Studies meeting


 BOS Convener

Approved in Academic Council meeting


 BOS Chairman

Text Book(s):

- T1. R.Muthusubramanian and S.Salivahanan, "Basic Electrical and Electronics Engineering", McGraw Hill India Limited, New Delhi, 2014.

Reference Book(s):

- R1. B.L Theraja, "Fundamental of Electrical Engineering and Electronics", S.Chand Limited – 2006.
R2. J.B.Gupta, "Basic Electrical and Electronics Engineering", S.K.Kataria & Sons, 2009.
R3. Smarajit Ghosh, "Fundamental of Electrical and Electronics Engineering", Second Edition, PHI Learning Private Limited New Delhi, 2010.
R4. S. K. Sadhev, "Basic Electrical Engineering and Electronics", Tata Mcgraw Hill, 2017.

Web References:

1. <https://www.nptel.ac.in/courses/108108076/>
2. <https://www.oreilly.com/library/view/basic-electrical-and/9789332579170/>
3. <http://www.ait.ac.jp/en/faculty/lab-engineering/latter/elec-material/>
4. <http://www.electrical4u.com>
5. <http://www.allaboutcircuits.com>

Course Articulation Matrix

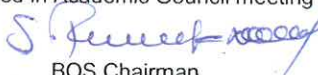
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO2	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO4	1	-	-	-	-	-	-	1	-	1	-	-	-	-
CO5	1	-	-	-	-	-	-	1	-	1	-	-	-	-
CO6	2	-	-	-	-	-	-	-	2	2	-	-	-	-

High-3; Medium-2; Low-1

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

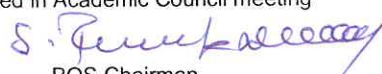
Assessment Pattern

	Assessment Component	CO.No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment – Practical	1,2,3,6	75	10
	Final Assessment – Practical	1,2,3,6	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19ITSN2101		Course Title: Problem Solving using C	
Course Category: Engineering Science		Course Level: Introductory	
L:T:P(Hours/Week) 3: 0: 3	Credits:4.5	Total Contact Hours:90	Max. Marks:100

Pre-requisites

➤ Nil

Course Objectives

The course is intended to:

1. Write solutions using problem solving techniques and appropriate programming constructs
2. Develop programs using selection, iteration statements and arrays
3. Construct programs using functions and strings
4. Implement programs using pointers, structures and unions
5. Write programs using files and preprocessor directives

Unit I C Programming Basics

9 Hours

General Problem solving strategy – Program development cycle - Problem Solving Techniques : Algorithm, Pseudocode and Flow Chart - Overview of C – Structure of C program – C Character set – keywords- Identifiers – Variables and Constants – Data types – Type conversion – Operators and Expressions – Managing formatted and unformatted Input & Output operation.

Unit II Control Structures and Arrays

9 Hours

Storage classes - Statements: Selection statements - Jump statements - Iteration statements. Arrays: Characteristics of Array – Single-dimensional array – Two-dimensional array – Array Operations – Applications: Linear search, Selection sort, Matrix Operations.

Unit III Functions and Strings

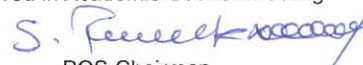
9 Hours

Functions: Declaration & Definition – Return statement – Classification of functions – Parameter passing methods: call by value – call by reference – Passing Array to a Function–

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BOS Chairman

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Write solutions using problem solving techniques and appropriate programming constructs for solving problems	Apply
CO2: Develop programs using selection, iteration statements and arrays for a given scenario	Apply
CO3: Construct programs using functions & strings for a given application	Apply
CO4: Implement programs using pointers, structures & unions for various real time applications	Apply
CO5: Write programs using files & preprocessor directives and graphics functions for a given scenario	Apply

Text Book(s):

T1. Ajay Mittal, "Programming in C - A Practical Approach ", 3rd Edition, Pearson Education, 2010.

Reference Book(s):

R1. Venit S, and Drake E, "Prelude to Programming Concepts and Design", 6th Edition, Pearson Education, 2015

R2. Ashok N. Kamthane, Amit. N. Kamthane, "Programming in C", 3rd Edition, Pearson Education, 2015.

R3. Yashavant P. Kanetkar, "Let Us C", 16th Edition, BPB Publications, 2018.

R4. Pradip Dey, Manas Ghosh, "Computer Fundamentals and Programming in C", 2nd Edition, Oxford University Press, 2013.

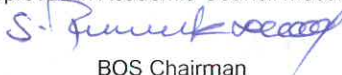
Web References:

1. <http://www.cprogramming.com/>
2. <http://www.c4learn.com/>

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO2	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO3	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO4	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO5	2	-	-	-	-	-	-	1	2	3	-	-	2	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment – Practical	1,2,3,4,5	75	10
	Final Assessment – Practical	1,2,3,4,5	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19PSHG3002		Course Title: Personal Effectiveness (common to all B.E/B.Tech programmes) (2019 Batch only)	
Course Category: Humanities		Course Level: Introductory	
L:T:P(Hours/Week) 0: 0: 2	Credits:1	Total Contact Hours:30	Max. Marks:100

Pre-requisites

- Nil

Course Objectives

The course is intended to:

1. Set SMART goals for academic, career and life
2. Identify strength, weaknesses and opportunities
3. Plan for achieving the goals
4. Apply time management techniques
5. Create time and pursue activities of self interest

Unit I The Importance of Envisioning

Importance of positive self-perception – Principle of dual creation (Everything gets created twice – Envisioning) - Understanding Vision and mission statements - Writing personal mission statements – ‘Focus’ as a way of life of most successful people – Importance of goal setting –Importance of planning and working to time.

Unit II Fundamental Principles of Goal Setting and Working to Time

Clarifying personal values, interests and orientations – Awareness of opportunities ahead – Personal SWOT analysis - Principles driving goal setting: Principle of response and stimuli, Circle of influence and circle of concern, What you see depends on the role you assume.

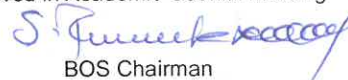
Unit III Goal Setting and Action Orientation

Potential obstacles to setting and reaching your goals - Five steps to goals setting: SMART goals, Inclusive goals, Positive stretch, Pain vs gain, Gun-point commitment – Importance of action orientation - Converting goals to actionable tasks – Establishing road map – Using Gantt chart for planning and progress.

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Unit IV Time Management - Tools and Techniques

Pareto 80-20 principle of prioritization – Time quadrants as a way to prioritize weekly tasks – The glass jar principle - Handling time wasters – Assertiveness, the art of saying 'NO' – Managing procrastination.

Unit V Putting into Practice

Practicals: Using the weekly journal – Executing and achieving short term goals – Periodic reviews.

Course Outcomes	Cognitive/ Affective Level
At the end of this course, students will be able to:	
CO1: Identify the strengths, weaknesses and opportunities	Apply
CO2: Set well-articulated goals for academics, career, and personal aspirations	Apply
CO3: Establish the road map to realize the goals	Apply
CO4: Apply time management techniques to complete planned tasks on time	Apply
CO5: Create time and pursue activities of self-interest that add value	Value

Text Book(s):

T1. Reading material, workbook and journal prepared by PS team of the college.

Reference Book(s):

- R1. Stephen R Covey, "First things first", Simon & Schuster Uk, Aug 1997.
R2. Sean Covey, "Seven habits of highly effective teenagers", Simon & Schuster Uk, 2004.

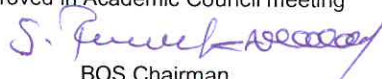
Course offering:

Orientation programme (2 days)	CO1 and CO2
Student practice (weekly review classes)	CO3
Student journal writing (interim reviews)	CO4 and CO5

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Articulation Matrix

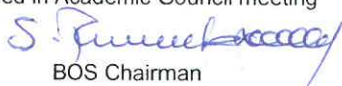
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	-	1	-	1	1	-	1	-	-
CO2	-	-	-	-	-	-	1	-	-	-	1	1	-	-
CO3	-	-	-	-	-	-	1	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	2	1	1	-	-	-
CO5	-	-	-	-	-	1	1	-	-	-	-	1	-	-

High-3; Medium-2; Low-1

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Unit V Z Transforms**9+3 Hours**

Z transform- region of convergence- properties of z transforms- inverse transform-Solution to homogeneous linear constant difference equations-Interpretation of stability in Z domain.

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Determine the curvature and equation of evolutes of a curve using differentiation techniques	Apply
CO2: Apply partial derivatives to find extreme values of functions and to vector fields	Apply
CO3: Solve the various types of first, second and higher order ordinary differential equations using various techniques	Apply
CO4: Compute the Fourier series expansion for given periodic functions	Apply
CO5: Compute Z transform and inverse transform for discrete time sequences	Apply

Text Book(s):

- T1. Erwin Kreyszig, "Advanced Engineering Mathematics", 10th Edition, John Wiley & sons, 2010.
- T2. B.S.Grewal, "Higher Engineering Mathematics", 43rd Edition, Khanna Publishers, 2014.

Reference Book(s):

- R1. Veerarajan, "Engineering Mathematics (for semester III)", 3rd Edition, Tata McGraw-Hill, New Delhi, 2010.
- R2. Srimanta Pal & Subodh C. Bhunia. "Engineering Mathematics", 1st Edition, Oxford University Press, 2015.

Web References:

1. <https://nptel.ac.in/courses/117105134/15>
2. <https://nptel.ac.in/courses/122101003/44>

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Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO2	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO3	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO4	2	-	-	-	-	-	-	2	2	3	-	2	-	-
CO5	2	-	-	-	-	-	-	2	2	3	-	2	-	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Assessment	CCET 1	1,2	50	30
	CCET 2	3,4	50	
	CCET 3	5	50	
	Tutorial	1,2,3,4,5	30	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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of texts and their contexts with speed – Note making – Reading a review – Paraphrasing – Reading to comprehend.

Unit IV Writing

15 Hours

Reported speech & Concord (Subject - verb Agreement) - Report writing - Different kinds of Report - Structure of the report - Writing Proposal - Plagiarism – References – Appendices – Techniques for Report writing – Registers.

List of Tasks

1. BEC Vantage Listening Test- 1 & Speaking Test-1
2. BEC Vantage Listening Test-2 & Speaking Test-2
3. BEC Vantage Listening Test-3 & Speaking Test-3
4. BEC Vantage Listening Test-4 & Speaking Test-4
5. BEC Vantage Listening Test-5 & Speaking Test-5
6. BEC Vantage Listening Test-6 & Speaking Test-6

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Listen actively and empathetically, and paraphrase discussions and presentations on complex and abstract themes and topics	Apply
CO2: Express one's views coherently, fluently and confidently highlighting the significant points with supporting details	Apply
CO3: Read and comprehend different types of texts and their contexts reasonably at moderate speed	Understand
CO4: Write detailed reports on variety of subjects synthesizing information gathered during listening & reading citing appropriate references	Apply

Text Book(s):

- T1. Whitby Norman, "Business Benchmark Upper Intermediate Students' Book", 2nd Edition, CUP Publications, 2014.
- T2. Learners Book prepared by the Faculty members of Department of English.

Reference Book(s):

- R1. Cambridge BEC Vantage - Practice Tests, Self-study Edition, Cambridge University Press, 2002.
- R2. Hewings Martin , "Advanced Grammar in use - Upper-intermediate Proficiency", 3rd Edition, CUP, 2013.

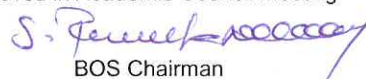
Web References:

- 1. <http://www.grammarinenglish.com> -Jan 23, 2018

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2. https://www.northshore.edu/support_centre/pdf/listen-notes.pdf
3. http://www.examenglish.com/BEC/BEC_Vantage.html - Jan 23, 2018

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	-	2	3	-	-	-	-
CO2	2	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	1	-	-	-	-	-	-	1	-	3	-	-	-	-
CO4	2	-	-	-	-	-	-	1	-	3	-	-	-	-

High-3; Medium-2; Low-1

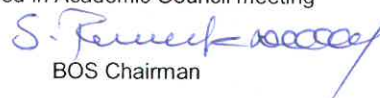
Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	2,3,4	50	20
	CCET II	2,3,4	50	
	CCET III	2,3,4	50	
	Continuous Assessment – Practical	1,2	75	10
	Final Assessment – Practical	1,2	50	10
End Semester Examination	ESE	2,3,4	100	60
			Total	100

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Unit IV Integrated Circuits**9 Hours**

Introduction to semiconductors: Intrinsic and extrinsic semiconductors- Advantages of Integrated circuits (ICs) over discrete components- IC classification- Construction of bipolar transistor - Epitaxial growth & Oxidation- Photolithography- Isolation diffusion -Base diffusion- Emitter diffusion - Contact mask- Aluminium metallization – Passivation- Structures of integrated PNP transistor.

Unit V Display Devices**9 Hours**

Human vision - Red, Blue, and Green (RGB) color scheme – Primary and secondary colors- Color addition and subtraction-Optical Emissions: Luminescence, photoluminescence, cathodoluminescence- electroluminescence -Injection electro Luminescence- Displays (Working principles): Plasma display, LED display, Liquid crystal display (LCD) and Numeric display.

List of Experiments**30 Hours**

1. Determination of Laser parameters- Wave length and particle size
2. Determination of Acceptance angle and Numerical aperture of an optical fiber
3. Determination of band gap of semi conducting material – Thermistor
4. Light Illumination characteristics of Light Dependent Resistor
5. Thickness of thin material – Air wedge
6. Determination of wavelength of the given light source using spectrometer

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Explain the fundamentals of light and properties of electromagnetic spectrum	Understand
CO2: Explain the application of Laser through their properties	Understand
CO3: Differentiate various types of optical fiber and its usefulness towards industrial applications	Understand
CO4: Explain the suitable methodology for fabricating integrated circuits	Understand
CO5: Describe the concept of colors and luminescence in various display devices	Understand

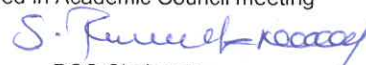
Text Book(s):

T1.M. N. Avadhanulu and P. G. Kshirsagar, "Text Book of Engineering Physics", S. Chand & Company Ltd., New Delhi, 2018.

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T2. David Armitage, "Introduction to Micro displays", John Wiley & Ltd, 2006.

T3. D.Roy Choudhry, Shail Jain, "Linear Integrated Circuits", 3rd Edition, New Age International Pvt. Ltd, 2010.

Reference Book(s):

R1. D. Halliday., R. Resnick and J. Walker, "Fundamentals of Physics", 10th Edition, Wiley Publications, 2014.

R2. Ajoy Ghatak, "Optics", 5th Edition, Tata McGraw-Hill Education, New Delhi, 2012.

R3. A. Marikani, "Engineering Physics", 2nd Edition, PHI Learning, New Delhi, 2014.

Web References:

1. https://onlinecourses.nptel.ac.in/noc17_cy07/preview
2. https://onlinecourses.nptel.ac.in/noc17_ph01/preview
3. <http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO2	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO4	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO5	1	-	-	-	-	-	-	1	2	3	-	-	-	-

High-3; Medium-2; Low-1

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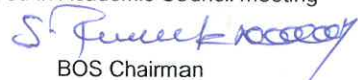
Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment – Practical	1,2,3,4,5	75	10
	Final Assessment – Practical	1,2,3,4,5	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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Unit V Basic Computer System , Memory and I/O Peripherals**6 Hours**

Computer System – Computer Memory - Random Access Memory - Read Only Memory - Expanding Memory Capacity – Input / Output Devices - Secondary Storage.

List of Experiments**30 Hours**

1. Verification of Boolean theorems using digital logic gates
2. Implementation of combinational circuits using basic gates
3. Logic verification of half adder and full adder
4. Logic verification of Multiplexer / Demultiplexer
5. Logic verification of 4 bit shift register
6. Logic verification of 3 bit binary counter

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Explain fundamental concepts in digital logic design	Understand
CO2: Explain the design of combinational logic circuits	Understand
CO3: Elucidate the analysis of synchronous sequential logic circuits	Understand
CO4: Elucidate the analysis of asynchronous sequential logic circuits	Understand
CO5: Categorize a computer system including Input /Output devices and Memory devices	Understand

Text Book(s):

- T1. Anil K. Maini, "Digital Electronics Principles, Devices and Applications", John Wiley & Sons, 1st Edition, 2007.
- T2. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, Naraig Manjikian, "Computer Organization and Embedded Systems", 6th Edition, McGraw-Hill, 2011

Reference Book(s):

- R1. Morris Mano, Michael Ciletti, "Digital Design", 5th Edition, Pearson Publication, New Delhi, 2014.

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- R2. Charles H.Roth, Jr. "Fundamentals of Logic Design", 7th Edition, Jaico publishing House, New Delhi, 2014.
- R3. Tokheim, "Digital Electronics Principles and Applications", Tata McGraw Hill, 6th Edition, 2004
- R4. Leach P Donald, Albert Paul Malvino and Goutam Saha, "Digital Principles and Applications", 7th Edition, McGraw Hill, 2010

Web References:

1. <http://www.nptel.ac.in/courses/108105132>
2. <https://www.surrey.ac.uk/Projects/Labview/boolalgebra/index.html>
3. https://scilab.in/textbook_run/2672/42/5

Course Articulation Matrix

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO2	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO4	1	-	-	-	-	-	-	1	2	3	-	-	-	-
CO5	1	-	-	-	-	-	-	1	-	2	-	-	-	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment – Practical	1,2,3,4	75	10
	Final Assessment – Practical	1,2,3,4	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
Total				100

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Dijkstra's Algorithm - All Pairs Shortest Path: Floyd's Algorithm -Minimum Spanning Tree:
Prim's Algorithm – Kruskal's Algorithm.

Unit V Sorting and Hashing

9 Hours

Sorting:-Insertion Sort-Shell Sort-Merge Sort-Quick sort-External sorting: Simple Algorithm-
Multiway Merge-Hashing: Hash Functions-Separate Chaining-Open Addressing-Rehashing-
Extendible hashing.

List of Exercises

45 Hours

1. Array implementation of ADT
 - a. List
 - b. Stack
 - c. Queue
2. Linked list implementation of ADT
 - a. List
 - b. Stack
 - c. Queue
3. Implementation of Binary Tree
 - a. Tree Traversal
 - b. Binary Search Tree
4. Implementation of Graph
 - a. Depth First Search
 - b. Breadth First Search
 - c. Dijkstra's Algorithm
5. Implementation of Sorting algorithms
 - a. Insertion Sort
 - b. Quick Sort

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Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Construct programs using pointers for a given scenario	Apply
CO2: Develop programs using stack and queue for given application	Apply
CO3: Implement Tree structure for a given scenario	Apply
CO4: Implement Graph structures for Networking problem	Apply
CO5: Apply suitable algorithms for sorting and hashing techniques for a given scenario	Apply

Text Book(s):

- T1. E.Balagurusamy, "Programming in ANSI C", 4th Edition, Tata McGraw-Hill Education, 2017.
- T2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", 2nd Edition, Pearson Education Asia, New Delhi, 2011.

Reference Book(s):

- R1. Ajay Mittal, "Programming in C - A Practical Approach", 3rd Edition, Pearson Education, 2010.
- R2. Sahni, "Data Structures Using C", Tata McGraw-Hill, New Delhi, 2006.
- R3. Michael.T.Goodrich, "Data Structures and Algorithm Analysis in C", Wiley student Edition, New Delhi, 2007.
- R4. Thomas H.Cormen, Charles E. Leiserson, Ronald L Rivest, Clifford Stein, "Introduction to Algorithms", MIT Press, England, 2009.

Web References:

1. <https://www.coursera.org/specializations/data-structures-algorithms>
2. <http://www.csse.monash.edu.au/~lloyd/tildeAlgDS>
3. <http://freevideolectures.com/Course/2279/Data-Structures-And-Algorithms>
4. <http://www.c4learn.com>

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Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO2	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO3	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO4	2	-	-	-	-	-	-	1	2	3	-	-	2	-
CO5	2	-	-	-	-	-	-	1	2	3	-	-	2	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment – Practical	1,2,3,4,5	75	10
	Final Assessment – Practical	1,2,3,4,5	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Sketch the orthographic projections of the given pictorial view of the object using first angle projection	Apply
CO2: Sketch the projections of simple solids such as prism, pyramid, cylinder and cone using rotating object method	Apply
CO3: Sketch the projections of simple sectioned solids with all necessary dimensions meeting the standards	Apply
CO4: Sketch the lateral surface of simple solids using straight line and radial line development methods	Apply
CO5: Sketch the isometric view of simple solids and truncated solids using principles of isometric projection	Apply

Text Book(s):

- T1. Cencil Jensen, Jay D.Helsel and Dennis R. Short, "Engineering Drawing and Design", 7th Edition, Tata McGraw Hill India, New Delhi, 2017.
- T2. Bhatt N.D. and Panchal V.M., "Engineering Drawing", 53rd Edition, Charotar Publishing House, Gujarat, 2015.
- T3. K. V. Natrajan, "A Text book of Engineering Graphics", 48th Edition, Dhanalakshmi Publishers, Chennai, 2018.

Reference Book(s):

- R1. Basant Agarwal and Agarwal C.M., "Engineering Drawing", 2nd Edition, Tata McGraw Hill India, New Delhi, 2013.
- R2. John K.C., "Engineering Graphics", 1st Edition, PHI Learning, Delhi, 2009.
- R3. Dhananjay A. Jolhe, "Engineering Drawing with an introduction to AutoCAD", 3rd Edition Tata McGraw India, New Delhi, 2008.

Publications of Bureau of Indian Standards

- IS 10711 – 2001: Technical products Documentation – Size and lay out of drawing sheets.
- IS 9609 (Parts 0 & 1) – 2001: Technical products Documentation – Lettering.
- IS 10714 (Part 20) – 2001 & SP 46 – 2003: Lines for technical drawings.
- IS 11669 – 1986 & SP 46 – 2003: Dimensioning of Technical Drawings.
- IS 15021 (Parts 1 to 4) – 2001: Technical drawings – Projection Methods.

Web References:

- <http://nptel.ac.in/courses/112103019/>
- https://en.wikipedia.org/wiki/Engineering_drawing

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Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	-	2	2	-	-	-	-
CO2	2	-	-	-	-	-	-	-	2	2	-	-	-	-
CO3	2	-	-	-	-	-	-	-	2	2	-	-	-	-
CO4	2	-	-	-	-	-	-	-	2	2	-	-	-	-
CO5	2	-	-	-	-	-	-	-	2	2	-	-	-	-

High-3; Medium-2; Low-1

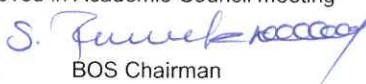
Assessment pattern

Continuous Assessment	Assessment component	CO. No.	Marks	Total Marks
	Each Lab Experiment	1,2,3,4,5	75	75
	Cycle Test 1	1,2,3	50	25
	Cycle Test 2	4,5	50	
Total				100

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Course Code:19CSSC4001		Course Title: IT Practices Lab (2020 Batch onwards)	
Course Category: Engineering Science		Course Level: Introductory	
L:T:P(Hours/Week) 1: 0: 4	Credits: 3	Total Contact Hours: 75	Max Marks:100

Pre-requisites

➤ Nil

Course Objectives

The course is intended to:

1. Build a web page with all web page elements
2. Develop a web design for any real time application
3. Design a Mobile application with GUI components
4. Build a real time mobile application

Unit I Introduction

7 Hours

Internet and World Wide Web – Web Browser – Web Server – Web Page – URIs and URLs – Client Side Scripting – Server Side Scripting
Study of Open Source Tools: Open Element, MIT App Inventor, any other Open source Tool

Unit II HTML

8 Hours

Structure of HTML -Special Characters and Horizontal rules – Headers - Lists – Tables – Forms – Links – Images - Internal Linking – frameset element - meta Elements.

List of Experiments

60 Hours

Web Applications

1. Develop a web page with image, text, links, tables
2. Build a web page with Menus, Image links and Navigations bars
3. Create a web page with containers and Media
4. Construct a web page to display own resume
5. Construct a web page to display the products of a company

Mobile Applications

6. Design an application with GUI widgets
7. Design an application with Layouts and Media
8. Create an application using Event handlers
9. Develop a calculator application to perform all arithmetic operations
10. Construct an application to calculate BMI

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Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Build a web page with all web page elements	Apply
CO2: Develop a web design for any real time application	Apply
CO3: Design a Mobile application using mobile development framework involving GUI components	Apply
CO4: Build a real time mobile application to handheld devices	Apply

Reference(s):

- R1. Harvey M. Deitel , Paul J. Deitel, "Internet and World Wide Web – How to Program", Fourth Edition ,Pearson Education Asia, 2009.
- R2. David Wolber , Hal Abelson , Ellen Spertus, Liz Looney, "App Inventor 2: Create Your Own Android Apps", 2nd Edition,O'Reilly Media, 2014.

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	1	-	-	1	2	3	-	-	2	-
CO2	2	-	-	-	1	-	-	1	2	3	-	-	2	-
CO3	2	-	-	-	1	-	-	1	2	3	-	-	2	-
CO4	2	-	-	-	1	-	-	1	2	3	-	-	2	-

High-3; Medium-2;Low-1

Assessment Pattern

	Assessment Component	CO.No.	Marks	Total
Continuous Assessment	Each Lab Experiment	1,2,3,4	75	75
	Cycle Test 1	1,2	50	25
	Cycle Test 2	3,4	50	
Total				100

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Course Code: 19PSHG3001		Course Title: Wellness for Students (common to all B.E/B.Tech programmes) (2019 Batch only)	
Course Category: Humanities		Course Level: Introductory	
L:T:P(Hours/Week) 0: 0 :2	Credits: 1	Total Contact Hours: 30	Max. Marks:100

Pre-requisites

- Nil

Course Objectives

The course is intended to:

1. Articulate the importance of wellness for success in life
2. Understand the dimensions of wellbeing and relevant practices
3. Guide in adopting such practices to improve wellness
4. Reflect the impact of changes sensed on personal and social effectiveness

Unit I Wellness - Importance and Dimensions

Values and aspirations – goals – SMART Goals – means for achieving goals – job Vs career – success in life – attributes of successful persons. Maslow's Hierarchy of needs motivation - Concept of wellness – impact of absence of wellness - Wellness as important component to achieve success.

Wellbeing as per WHO - Dimensions of Wellbeing: Physical, Mental, Social, Spiritual – indicators and assessment methods – Guna – causes and impact - multiple dimensions of human structure (physical, astral, causal bodies) – human-panchabootha relationship.

Unit II Practices for Physical Wellness through Yoga

Simplified Physical Exercises: Hand, Leg, Neuromuscular breathing, eye exercises, kapalabathy, makarasanam 1 & 2, body massage, 14-points acupressure – Suryanamaskar - relaxation. Simple asanas.

Unit III Practices for Physical Wellness through Exercises

Fitness as a subset of Wellness – health related physical fitness - skill related physical fitness. Exercises related ailment and injuries - safety and precautions - first aid.

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Fitness development: Muscular strength – exercises (calisthenics): pull-up, sit-up, push-up and weight training; Explosive power – exercises: vertical jump, long jump; Cardio respiratory endurance– exercises: walking, jogging, treadmill, stair climbing, bicycling, skipping; Flexibility – exercises: stretching.

Speed, agility, balance and coordination – exercises: sprint, cone drill, ladder drill, hurdle drill, ball throw - mental agility exercises.

Unit IV Practices for Mental Wellness

Meditation: Mind and its functions - mind wave frequency - Agna, Thuriyam and Shanthi meditation – introspection: analysis of thoughts, moralization of desire, neutralization of anger and eradication of worries - simple mindfulness exercises.

Unit V Practices for Social and Spiritual Wellness

Kayakalpa yoga - youthfulness and life force - cultural education – greatness of guru – universal compassion – fivefold culture. Greatness of friendship and social welfare – individual, family and world peace – blessings and benefits.

Food & sleep for wellness: balanced diet - good food habits for better health (anatomic therapy) – hazards of junk food - food and the gunas.

Course Outcomes	Cognitive / Affective Level
At the end of the course, the students will be able to:	
CO1: Explain the concept of wellness and its importance to be successful in career and life	Understand
CO2: Explain the dimensions of wellness and practices that can promote wellness	Understand
CO3: Demonstrate the practices that can promote wellness	Respond
CO4: Sense and improve the wellness periodically and its impact on personal effectiveness	Value
CO5: Maintain harmony with self, family, peers, society and nature	Internalize

Text Book(s):

T1. Reading material and workbook prepared by PS team of the college.

Reference Book(s):

- R1. Vethathiri Maharishi Institute for Spiritual and Intuition Education, Aliyar, "Value education for harmonious life (Manavalakalai Yoga)", Vethathiri Publications, Erode, I Ed., 2010.
- R2. Dr.R.Nagarathna, Dr.H.R.Nagendra, "Integrated approach of yoga therapy for positive health", Swami Vivekananda Yoga Prakashana, Bangalore, 2008.

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R3. Tony Buzan, Harper Collins, The Power of Physical Intelligence (English).

Course offering:

Orientation programme (3 days)	CO1 and CO2
Student practice (weekly review classes)	CO3
Student journal writing (interim reviews)	CO4 and CO5

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	-	-	1	1	-	-	-	-	-
CO2	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO3	-	-	-	-	-	1	1	1	1	-	-	1	-	-
CO4	-	-	-	-	-	1	1	-	1	-	-	-	-	-
CO5	-	-	-	-	-	1	1	-	1	-	-	1	-	-

High-3; Medium-2; Low-1

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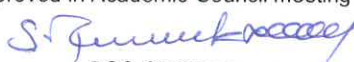
Assessment Pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	Yoga: Physical Exercises, KayaKalpa	1,2,3,4,5	15	75
	Meditation		15	
	Assessment of student's workbook		10	
	Sports: Physical Exercises, KayaKalpa		20	
	Assessment of student's workbook		15	
End Semester Examination (combined for yoga and sports)	Written test (MCQ and short answers)	1,2,3,4,5	30	Marks out of 100 is reduced to 25
	Physical exercises		50	
	Viva-voce		20	
			Total	100

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BOS Chairman

Course Code: 19PSHG6001		Course Title: Wellness for Students (Common to all B.E/B.Tech Programmes) (2020 Batch onwards)	
Course Category: Humanities		Course Level: Introductory	
L:T:P(Hours/Week) 0: 0: 2	Credits:1	Total Contact Hours:30	Max. Marks:100

Pre-requisites

➤ NIL

Course Objectives

The course is intended to:

1. Set SMART goals for academic, career and life
2. Apply time management techniques
3. Articulate the importance of wellness for success in life.
4. Understand the dimensions of wellbeing and relevant practices

Unit I Goal Setting

Understanding Vision and mission statements - Writing personal mission statements – ‘Focus’ as a way of life of most successful people. Clarifying personal values, interests and orientations – Awareness of opportunities ahead – Personal SWOT analysis - Principles driving goal setting: Principle of response and stimuli, Circle of influence and circle of concern, What you see depends on the role you assume. Potential obstacles to setting and reaching your goals - Five steps to goals setting: SMART goals, Inclusive goals, Positive stretch, Pain vs gain, Gun-point commitment.

Unit II Time Management - Tools and Techniques

Importance of planning and working to time. Pareto 80-20 principle of prioritization – Time quadrants as a way to prioritize weekly tasks – The glass jar principle - Handling time wasters – Assertiveness, the art of saying ‘NO’ – Managing procrastination

Unit III Practices for Physical Wellness

Concept of wellness – impact of absence of wellness - Wellness as important component to achieve success. Wellbeing as per WHO - Dimensions of Wellbeing: Physical, Mental, Social, Spiritual – indicators and assessment methods

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Simplified Physical Exercises. Fitness as a subset of Wellness – health related physical fitness - skill related physical fitness. Joint movements, Warm up exercises, simple asanas, WCSC simplified exercises.

Unit IV Practices for Mental Wellness

Meditation: Mind and its functions - mind wave frequency – Simple basic meditation – WCSC meditation and introspection tables. Greatness of friendship and social welfare – individual, family and world peace – blessings and benefits.

Food & sleep for wellness: balanced diet - good food habits for better health (anatomic therapy) – hazards of junk food - food and the gunas

Unit V Putting into Practice

Practicals: Using the weekly journal – Executing and achieving short term goals – Periodic reviews.

Course Outcomes	Cognitive/ Affective
At the end of this course, students will be able to:	
CO1.Set well-articulated goals for academics, career, and personal aspirations	Apply
CO2.Apply time management techniques to complete planned tasks on time	Apply
CO3.Explain the concept of wellness and its importance to be successful in career and life	Apply
CO4.Explain the dimensions of wellness and practices that can promote wellness	Apply
CO5.Demonstrate the practices that can promote wellness	Valuing

Text book(s):

T1. Reading material, workbook and journal prepared by PS team of the college.

Reference Book(s):

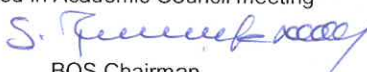
- R1. Stephen R Covey, "First things first", Simon & Schuster UK, Aug 1997.
- R2. Sean Covey, "Seven habits of highly effective teenagers", Simon & Schuster UK, 2004.
- R3.Vethathiri Maharishi Institute for Spiritual and Intuition Education, Aliyar, "Value education for harmonious life (Manavalakalai Yoga)", Vethathiri Publications, Erode, 1 Ed. (2010).
- R4.Dr. R. Nagarathna, Dr.H.R. Nagendra, "Integrated approach of yoga therapy for positive health", Swami Vivekananda Yoga Prakashana, Bangalore, 2008 Ed.
- R5.Tony Buzan, Harper Collins, The Power of Physical Intelligence (English).

Course Articulation Matrix

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CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO1
CO1	-	-	-	-	-	-	-	-	1	1	-	1		
CO2	-	-	-	-	-	-	-	-	1	-	1	1		
CO3	-	-	-	-	-	-	-	-	1	-	-	1		
CO4	-	-	-	-	-	-	-	-	1	-	-	1		
CO5	-	-	-	-	-	1	1	-	1	-	-	1		

High-3; Medium-2; Low-1

Assessment Pattern

	Assessment Component	CO. No.	Marks	Total	
Continuous Assessment	Personal Effectiveness	1,2,5	35	75	
	Yoga and physical Exercise:	3,4,5	20		
	Physical Exercises				10
	Meditation				10
	Assessment of student's workbook		10		
End Semester Examination	Written test (MCQ and short answers)	1,2,3,4,5	30	Marks out of 100 is reduced to 25	
	Physical exercises		50		
	Viva-voce		20		
			Total	100	

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Course Code: 19CHMG6201	Course Title: Environmental Sciences (Common to all B.E/B.Tech Programmes)	
Course Category: Mandatory Non-Credit Course	Course Level: Introductory	
L:T:P(Hours/Week) 1: 0: 0	Total Contact Hours:15	Max. Marks: 100

Pre-requisites

➤ NIL

Course Objectives

The course is intended to:

1. Create awareness for conservation and equitable use of natural resources.
2. Explain the measures of prevention of pollution and disaster management.
3. State the importance of environmental legislation in India.
4. Expose the general environmental issues relevant to human health.
5. Explain the innovative measures for day to day environmental issues.

Unit I Natural Resources 2 Hours

Role of individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

Unit II Environmental Pollution and Disaster Management 2 Hours

Role of an individual in prevention of pollution; Disaster management : floods, earthquake, cyclone and landslides.

Unit III Environmental Ethics and Legislations 2 Hours

Environmental ethics : Environment Protection Act; Air Act; Water Act ; Wildlife Protection Act; Forest Conservation Act; Issues involved in enforcement of environmental legislation.

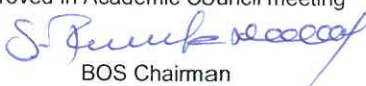
Unit IV Environmental Issues and Public Awareness 2 Hours

Public awareness - Environment and human health

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Unit V Environmental Activities**7 Hours****(a) Awareness Activities:**

- i) Small group meetings about water management, promotion of recycle use, generation of less waste, avoiding electricity waste
- ii) Slogan making event
- iii) Poster making event

(b) Actual Activities:

- i) Plantation
- ii) Cleanliness drive
- iii) Drive for segregation of waste
- iv) To know about the different varieties of plants
- v) Shutting down the fans and ACs of the campus for an hour or so

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Describe the measures for conservation and equitable use of natural resources	Understand
CO2: Describe the measures for pollution prevention and disaster management	Understand
CO3: Brief the importance of environmental legislation in India	Understand
CO4: Explain the general environmental issues in relevant to human health	Understand
CO5: Demonstrate innovative measures for day to day environmental issues	Understand

Text Book(s):

T1. Benny Joseph, "Environmental Studies", Tata McGraw Hill, New Delhi, 2006.

T2. Mackenzie Davis and Susan Masten, "Principles of environmental engineering and science", Mc-Graw Hill, 3rd Edition, 2014.

Reference Book(s):

R1. Trivedi R.K. "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards", Vol. I and II, Enviro Media.

R2. Cunningham, W.P. Cooper, T.H. Gorhani, "Environmental Encyclopedia", Jaico Publishing House, Mumbai, 2001.

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Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	2	1	2	-	-	-	-
CO2	1	-	-	-	-	-	-	2	1	2	-	-	-	-
CO3	1	-	-	-	-	-	-	2	1	2	-	-	-	-
CO4	1	-	-	-	-	-	-	2	1	2	-	-	-	-
CO5	1	-	-	-	-	-	-	2	1	2	-	-	-	-

High-3; Medium-2; Low-1

Assessment Pattern

Component	Marks	Details
Attendance	10	Minimum 80% and 1 mark for every 2% observed
Knowledge Test	40	Objective type questions
Activity(ies)	50	Report on the activity performed
Total	100	

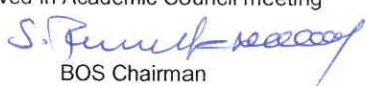
Non-letter Grades

Marks Scored	Performance Level
70 & above	Good
30 – 69	Average
< 30	Fair

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Semester III

Course Code: 19MABC1303		Course Title: Discrete Mathematics (common to CS &IT)	
Course Category: Basic Science		Course Level: Introductory	
L:T:P(Hours/Week) 3: 1: 0	Credits:4	Total Contact Hours:60	Max. Marks:100

Pre-requisites

- Linear Algebra and Infinite Series

Course Objectives

The course is intended to:

1. Use the concepts of propositional logic to test the validity of arguments
2. Use the concepts of sets, relations and functions in programming
3. Use combinatorics in counting problems
4. Use the concepts of groups to study the algebraic structures
5. Use Euclidean algorithm to compute gcd and congruence equations

Unit I Logic

9+3 Hours

Propositions- Logical operators – Logical equivalences and implications - Normal forms –Rules of inference-Consistency and inconsistency- Theory of Inference – Proofs – Predicates-Quantifiers- Universe of discourse – Validity of arguments.

Unit II Sets, Relations and Functions

9+3 Hours

Relations –Types of relations – Properties of relations - Equivalence relations –Relational matrix - Graph of relations – Partial ordering relation - Poset – Hasse Diagram - Lattices – Properties of Lattices. Functions - Type of functions: Injective, surjective and bijective functions –Composition of functions – Inverse functions.

Unit III Combinatorics

9+3 Hours

Mathematical induction- Basics of counting–Pigeon hole principle – Permutations with and without repetition – Circular permutation – Combinations - Recurrence relations-Solution of linear recurrence relations.

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Unit IV Algebraic Structures**9+3 Hours**

Algebraic Systems – properties – Semi groups and monoids – Homomorphism – Sub semi groups and sub monoids – Groups – Abelian group – Cyclic group – Cosets – Lagrange’s theorem – Codes and Group codes.

Unit V Divisibility and Congruence**9+3 Hours**

Division Algorithm – Prime and Composite Numbers – Fundamental theorem of Arithmetic - Euclidean algorithm - GCD and LCM – Congruence – Linear congruence – Chinese Remainder Theorem.

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1. Apply logic to test the validity of arguments	Apply
CO2. Apply the concepts of sets, relations and functions in discrete structures	Apply
CO3. Solve the counting problems using combinatorics	Apply
CO4. Apply the concepts of groups and its properties to algebraic structures	Apply
CO5. Compute GCD using Euclidean algorithm and solve system of linear congruence equations	Apply

Text Book(s):

- T1. J.P.Trembly, R. Manohar, “Discrete Mathematical Structures with applications to Computer Science”, First edition, TMH International Edition, July 2017.
- T2. T.Veerarajan, “Discrete Mathematical Structures with Graph Theory and Combinatorics”, First edition, Tata McGraw-Hill Education Private Limited, New Delhi, July 2017.

Reference Book(s):

- R1. Kenneth H. Rosen, “Discrete Mathematics and Its Applications”, Seventh edition, Tata McGraw-Hill Pub. Co. Ltd., New Delhi, July 2017.
- R2. Ralph P Grimaldi, Ramana. B. V, “ Discrete and Combinatorial Mathematics”, Fifth Edition, Pearson Education India, 2011.
- R3. Tom M.Apostol, “Introduction to Analytic Number Theory”, Springer Science+ Business Media, Newyork, 1976.

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Web References:

1. Logic, Relations: <http://nptel.ac.in/courses/106106094>
2. Combinatorics: <https://nptel.ac.in/courses/111/104/111104026/>
3. Algebraic Structures: <https://nptel.ac.in/courses/106/103/106103205/>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	2	2	-	-	-	2	2	-	2	-	-
CO2	3	2	-	2	2	-	-	-	2	2	-	2	-	-
CO3	3	2	-	2	2	-	-	-	2	2	-	2	-	-
CO4	3	2	-	2	2	-	-	-	2	2	-	2	-	-
CO5	3	2	-	2	2	-	-	-	2	2	-	2	-	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Assessment	CCET 1	1,2	50	30
	CCET 2	3,4	50	
	CCET 3	5	50	
	Tutorial	1,2,3,4,5	30	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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Unit IV Backtracking**12 Hours**

Backtracking: The General method – N Queens Problem - Hamiltonian Circuit Problem - Sum of Subsets – Graph Coloring – Knapsack Problem.

Unit V Branch & Bound and Computability Classes**12 Hours**

Branch and Bound Techniques: The General method - FIFO Branch & Bound - LC Branch & Bound - 0/1 Knapsack problem - Traveling Salesman Problem - Assignment Problem – P, NP, NP Complete, NP Hard Problems– Theory of Reducibility.

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Apply the fundamental principles of algorithm analysis for various problems	Apply
CO2: Compare different algorithm design technique for the stated problem	Analyze
CO3: Analyze different algorithmic solutions for the given scenario	Analyze
CO4: Categorize the problem type using various design techniques	Analyze
CO5: Demonstrate the various class of problems and reducibility concept for computational problems	Apply

Text Book(s):

T1. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Education, Third Edition, 2013.

Reference Book(s):

- R1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, "Introduction to Algorithms", 3rd Edition, MIT Press and McGraw-Hill Publications, 2009.
- R2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", 2nd Edition, Pearson Education Asia, New Delhi, 2011.
- R3. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms", 2nd Edition, Galgotia Publications, New Delhi 2008.

Web References:

1. <http://webpages.uncc.edu/ras/ITCS2215.html>
2. <http://www.pearsoned.co.in/prc/book/anany-levitin-introduction-design-analysis-algorithms-2e-2/9788131718377>
3. <https://vtucsenotes.wordpress.com/fourth-sem/design-and-analysis-of-algorithms/>

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Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2	-	-	-	1	1	-	1	2	1
CO2	3	3	3	3	2	-	-	-	2	1	-	1	2	1
CO3	3	3	3	3	2	-	-	-	2	1	-	1	2	1
CO4	3	3	3	3	2	-	-	-	2	1	-	1	2	1
CO5	3	3	3	3	2	-	-	-	1	2	-	1	2	1

High-3; Medium-2; Low-1

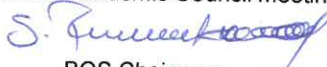
Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Assessment	CCET 1	1,2	50	30
	CCET 2	3,4	50	
	CCET 3	5	50	
	TQA	1,2,3,4,5	30	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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BOS Chairman

Course Code: 19ITCN1302		Course Title: Object Oriented Programming using Java	
Course Category: Professional Core		Course Level: Practice	
L: T :P (Hours/Week) 3: 0: 0	Credits:3	Total Contact Hours:45	Max. Marks:100

Pre-requisites

- Problem Solving using C

Course Objectives

The Course is intended to

1. Create simple program using java variables, operators and statements
2. Use inheritance concepts to achieve reusability
3. Handle errors using Exception handling and leverage multi-threading capability
4. Use files to store and process data of java program
5. Develop simple GUI based applications and handle objects using collections

Unit I Introduction 9 Hours

Java Features - Java Program Structure - Constants – Variables - Data Types - Scope of Variables – Operators - Java Virtual Machine -Command Line Arguments – Classes & Methods - Object Creation - Constructors – Method Overloading - Static Members - Garbage Collection – Arrays.

Unit II Inheritance, Packages and Interfaces 9 Hours

Class Inheritance: Types - Method Overriding - Super Keyword - Final Variables and Methods - Final Classes. Abstract Classes and Methods – Interfaces - Extending Interfaces - Implementing Interfaces - Hiding Classes - Packages - Importing Packages - Visibility Control - String Class -String Buffer.

Unit III Exception Handling and Thread 9 Hours

Exception: Types - Uncaught Exceptions - Try - Catch - Multiple Catch -Nested Try -Throw-Throws - Finally - Built in Exceptions – User Defined Exceptions – Thread - Extending the Thread Class - Thread Life Cycle -Multithreading-Thread Exception -Thread Priority -Thread Model.

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Unit IV Stream and Built in Classes**9 Hours**

Introduction to File & Operations - Introduction to Stream - Byte Streams - DataInput / OutputStream —FileInput / OutputStream) - Character Streams (Reader/Writer- FileReader/Writer) - StringTokenizer - Calendar- Date.

Unit V Collections and GUI Programming**9 Hours**

Collection, Set, List, Queue, Collections Classes – Array List, Hash Set, Tree Set. Accessing a Collection via Iterators. Map Interfaces - SWING Basics - Layout Managers - Event Handling – Swing Components: JLabel- JButton - JTextField - JRadioButton – JTextArea.

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Create simple java programs that solve simple business problems	Apply
CO2: Apply inheritance and packages in order to attain code minimization and reusability	Apply
CO3: Differentiate multi- threading and multi- tasking concepts and incorporate threads in java application	Apply
CO4: Incorporate data persistence in Java Applications using Streams and Files	Apply
CO5: Design Graphical User Interface (GUI) by using JApplet and Swing	Apply

Text Book(s):

T1. Schildt. Herbert., "Java - The complete Reference", 9th Edition, McGraw Hill Education, 2014.

Reference Book(s):

R1. Deitel and Deitel, "Java How to Program", Prentice Hall, 10th Edition, 2014.

R2. Bruce Eckel, "Thinking In Java", 4th Edition, Pearson, 2008.

R3. Timothy Budd, "An Introduction to object oriented programming", 3rd Edition, Pearson Education, 2002

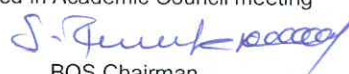
Web References:

1. <http://docs.oracle.com/javase/7/docs/api/>
2. <http://www.programmingsimplified.com/java-source-codes>
3. <http://www.coderanch.com/forums/f-33/java>
4. <http://www.programmingsimplified.com/java-source-codes>

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Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	-	2	2	-	-	2	1	2	-	1	2	-
CO2	2	1	-	2	2	-	-	2	1	2	-	1	2	-
CO3	2	1	-	2	2	-	-	2	1	2	-	1	2	-
CO4	2	1	-	2	2	-	-	2	1	2	-	1	2	-
CO5	2	1	-	2	2	-	-	2	1	2	-	1	2	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Assessment	CCET 1	1,2	50	30
	CCET 2	3,4	50	
	CCET 3	5	50	
	TQA	1,2,3,4,5	30	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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BOS Convener

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Course Code: 19ITSN2301		Course Title: Computer Organization and Microprocessor	
Course Category: Engineering Science		Course Level: Introductory	
L:T:P(Hours/Week) 3: 0: 2	Credits: 4	Total Contact Hours: 75	Max Marks:100

Pre-requisites

- Digital System Design

Course Objectives

The course is intended to:

1. Explain computer system and apply the various addressing schemes
2. Explain the basic processing unit and analyze the issues in pipelining organization
3. Illustrate the functionality of Memory hierarchy
4. Apply the programming concepts of 8086 microprocessor
5. Apply the programming concepts of 8051 microcontroller

Unit I **Basic Structure Of Computers and Instruction Set** **9 Hours**

Functional Units – Basic Operational Concepts – Performance - Memory Location and Addressing - Instructions and Instruction Sequencing - RISC & CISC Architecture.

Unit II **Basic Processing and Pipelining** **9 Hours**

Basic Processing Fundamental Concepts - Instruction Execution - Hardwired Control - Micro Programmed Control. Pipeline Organization - Pipelining Issues – Data Dependencies - Memory Delays – Branch Delays.

Unit III **Memory and I/O System** **9 Hours**

Memory Technology - Semiconductor RAM Memories - Read only memories - Cache Memories - Virtual memory - Accessing I/O devices – Interrupts - Direct Memory Access

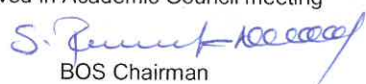
Unit IV **8086 Microprocessor** **9 Hours**

8086 Microprocessor – Architecture - Minimum mode and maximum mode - Addressing modes – Instruction set – Assembler directives – Assembly language programming – Interrupts - Interrupt service routine - Programmable Peripheral Interfacing (PPI)

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Unit V 8051 Microcontroller**9 Hours**

8051 Architecture – Special Function Registers – Memory organization - Counters and Timers - Interrupts and its types - Instruction sets - Assembly language programming - Keyboard display interfacing.

Introduction to the Arduino – Arduino IDE – Arduino Programs (Not for examination)

List of Experiments**30 Hours**

1. Arithmetic operation using 8086
2. Interfacing stepper motor with 8086
3. Arithmetic operation using 8051
4. Interfacing 7 segment LED display with 8051
5. LED ON/OFF and Proximity sensor control using Arduino
6. Mini project using Arduino

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Explain computer system and apply the various addressing schemes for instruction sequencing	Understand
CO2: Enlighten the basic processing unit and analyze the issues in pipelining organization	Understand
CO3: Illustrate the functionality of Memory hierarchy	Apply
CO4: Apply the programming concepts of 8086 microprocessor	Apply
CO5: Apply the programming concepts of 8051 microcontroller	Apply

Text Book(s):

- T1. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, Naraig Manjikian, "Computer Organization and Embedded Systems", 6th Edition, McGraw-Hill, 2017. (Unit-I, Unit-II and Unit-III)
- T2. Ray.A.K. & Bhurchandi.K.M, "Advanced Microprocessor and Peripherals – Architecture, Programming and Interfacing", 3rd Edition Tata Mc Graw Hill, 2013. (Unit-IV and Unit-V)

Reference Book(s):

- R1. William Stallings, "Computer Organization & Architecture - Designing for Performance", 10th Edition, Pearson Publication, 2015.
- R2. John Hayes, "Computer Architecture and Organization", 3rd Edition, McGraw Hill Education, 2017.
- R3. Kenneth J. Ayala, "The 8086 Microprocessor: Programming & Interfacing the PC", 1st Edition, Delmar Publishers, 2007.

Passed in Board of Studies meeting


 BOS Convener

Approved in Academic Council meeting


 BOS Chairman

R4. Mohamed Ali Mazidi, Janice Gillispie Mazidi, "The 8051 Microcontroller and Embedded Systems using Assembly and C", Second Edition, Pearson Education / Prentice Hall of India, 2007.

Web References:

1. <https://nptel.ac.in/courses/106103068/>
2. <https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/#bci>
3. <https://create.arduino.cc/projecthub>

Course Articulation Matrix

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	-	-	1	2	3	-	-	-	-
CO2	2	-	-	-	-	-	-	1	2	3	-	-	-	-
CO3	2	-	-	-	-	-	-	1	2	3	-	-	-	-
CO4	2	-	-	-	-	-	-	1	2	3	-	-	-	-
CO5	1	-	-	-	-	-	-	1	-	1	-	-	-	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Comprehensive Evaluation	CCET 1	1, 2	50	20
	CCET 2	3, 4	50	
	CCET 3	5	50	
	Continuous Assessment – Practical	1,2	75	10
	Final Assessment – Practical	1,2	50	10
End Semester Examination	ESE	1, 2, 3, 4, 5	100	60
Total				100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19ITCN2301		Course Title: Software Engineering	
Course Category: Professional Core		Course Level: Introductory	
L:T:P (Hours/Week) 3 : 0: 2	Credits:4	Total Contact Hours:75	Max. Marks:100

Pre-requisites

- Nil

Course Objectives

The course is intended to:

1. Identify the suitable software process model
2. Demonstrate the requirement model of software
3. Classify the software architecture
4. Apply the selected testing strategy and maintenance
5. Illustrate the concepts of software quality and configuration management

Unit I Software Process and Agile Development

9 Hours

Introduction to Software Engineering - Process Framework-Process Models: Waterfall model-Incremental model-Evolutionary model- Object Oriented Model- Introduction to Agility-Agile process model: XP – scrum.

Unit II Requirement Engineering

9 Hours

Requirement Engineering Tasks- Groundwork-Eliciting requirements- Developing Use Cases – Building the analysis Model – Negotiating Requirements-Validating Requirements-SRS-UML Diagram-Requirement Analysis Modelling:Data Modeling- Scenario Based Modeling-Flow Oriented Modeling-Class Based Modeling.

Unit III Design Engineering

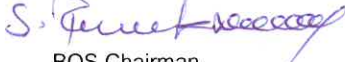
9 Hours

Introduction to design Engineering- Design process and quality – Design Concepts-Design Model–Architectural Styles- Architectural Design – Agility and Architecture-Component level Design: Designing Class based components, Designing traditional Components- User Interface Design: Interface analysis, Interface Design: The Golden rules-User interface analysis and design- Interface analysis- Design issues.

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BOS Convener

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BOS Chairman

Unit IV Testing and Maintenance 9 Hours

Strategic approach to Software testing- Test strategies for conventional software- Unit testing-Integration testing- Validation testing—system testing-White Box testing- Basis path testing – Black box testing-Graph based testing-Equivalence partitioning –BVA- Software Reengineering – Reverse Engineering.

Unit V Software Quality and Project Management 9 Hours

Software Quality Assurance- Software reviews-Formal technical reviews-Statistical software quality assurance – Reliability- Software configuration Management- SCM Repository- The SCM process- Agile Project Management.

List of Exercises 30 Hours

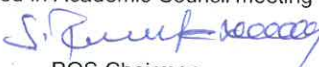
1. Identify suitable software development model for the specific scenario and demonstrate it
2. Identify the requirements from specific scenario and categorize functional and non functional requirements
3. Create the software requirement specification document for identified scenario
4. Manage the requirements using test link requirement management tool and validate the requirement coverage for specific scenario
5. Select appropriate test cases, prioritize the test case execution and report the failed test execution using test link
6. Generate the test execution report and test coverage report using test link

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Identify the suitable software process model for specific scenario	Understand
CO2: Illustrate the relevant requirement for software	Understand
CO3: Build the software architecture using appropriate design Models.	Apply
CO4: Apply the selected testing strategy and maintenance to the developed software	Apply
CO5: Outline the concepts of software quality and configuration management for project	Understand

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BOS Convener

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BOS Chairman

Text Book(s):

T1. Roger S.Pressman, Bruce.R.Maxim, "Software Engineering – A Practitioner's Approach", 8th Edition, McGraw-Hill International Edition, New Delhi, 2015.

Reference Book(s):

- R1.Ian Sommerville, "Software Engineering", 10th Edition, Pearson Education Asia, 2015.
 R2.Shari Lawrence Pfleeger, Joanne M Atlee, "Software Engineering – Theory and Practice", 4th Edition, Pearson Education Asia, 2012.
 R3. Mark C.Layton, "Agile Project Management for Dummies", John Wiley & Sons, 2012.
 R4. Aggarwal K.K And Yogesh Singh, "Software Engineering", 3rd Edition, New Age International Publishers, 2014.

Web Reference(s):

1. <https://nptel.ac.in/courses/106/105/106105182/>
2. <http://freevideolectures.com/Course/2318/Software-Engineering>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	-	2	2	2	2	3	3	3	3	3	-	1
CO2	3	2	-	3	3	3	2	3	3	3	3	3	-	2
CO3	2	1	-	2	2	2	2	3	3	2	3	3	-	1
CO4	2	1	-	2	2	3	2	3	3	3	3	3	-	1
CO5	1	1	-	1	1	3	2	3	3	3	3	3	-	1

High-3; Medium-2; Low-1

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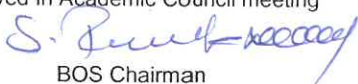
Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Comprehensive Evaluation	CCET 1	1, 2	50	20
	CCET 2	3, 4	50	
	CCET 3	5	50	
	Continuous Assessment – Practical	1,2	75	10
	Final Assessment – Practical	1,2	50	10
End Semester Examination	ESE	1, 2, 3, 4, 5	100	60
Total				100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19ITCN3301	Course Title: Design and Analysis of Algorithms Laboratory		
Course Category: Professional Core		Course Level: Practice	
L:T:P(Hours/Week) 0: 0: 3	Credits:1.5	Total Contact Hours:45	Max Marks:100

Pre-requisites

- Problem Solving using C
- Data Structures using C

Course Objectives

The course is intended to:

1. Introduce Searching and Sorting algorithms concepts
2. Apply the fundamental principles of algorithm analysis
3. Apply the different algorithm design techniques
4. Identify different problem types
5. Explore all possible solution for a given problem using Backtracking and Branch & Bound

List of Exercises

1. Implement and Analyze Sorting Algorithms: Selection Sort and Bubble Sort
2. Implement and Analyze Searching Algorithms: Sequential search and Binary search
3. Implement and Analyze Recursive Algorithms
4. Implement and Analyze Brute-force string Matching Problem
5. Implement and Analyze Min-Max Algorithm using Divide and Conquer Approach
6. Implement and Analyze Multistage Graphs using Dynamic Programming Approach
7. Implement and Analyze All pair shortest path using Dynamic Programming Approach
8. Implement and Analyze Knapsack Problem using Greedy Approach
9. Implement and Analyze Sum of subsets using Back Tracking Approach
10. Implement and Analyze Traveling Salesman Problem using Branch and Bound Approach

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Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Analyze the Searching and Sorting algorithm for the given value	Analyze
CO2: Apply the fundamental principles of algorithm analysis for various problems	Apply
CO3: Analyze different algorithmic solutions for the same problem	Analyze
CO4: Identify different problem types using various design techniques	Apply
CO5: Explore all possible solution for a given problem using Backtracking and Branch & Bound	Analyze

Reference (s):

- R1. AnanyLevitin, "Introduction to the Design and Analysis of Algorithms", Pearson Education, Third Edition, 2013.
- R2. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms", 2nd Edition, Galgotia Publications, NewDelhi 2008.
- R3. Ajay Mittal, "Programming in C – A Practical Approach" , 3rd Edition, Pearson Education, 2010.

Course Articulation Matrix

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2	-	-	-	1	1	-	1	2	1
CO2	3	3	3	3	2	-	-	-	2	1	-	1	2	1
CO3	3	3	3	3	2	-	-	-	2	1	-	1	2	1
CO4	3	3	3	3	2	-	-	-	2	1	-	1	2	1
CO5	3	3	3	3	2	-	-	-	1	2	-	1	2	1

High-3; Medium-2; Low-1

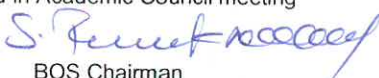
Assessment pattern

Continuous Assessment	Assessment component	CO. No.	Marks	Total Marks
	Each Lab Experiment	1,2,3,4,5	75	75
	Cycle Test 1	1,2	50	
	Cycle Test 2	3,4,5	50	25
	Total			

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19ITCN3302		Course Title: Object Oriented Programming using Java Laboratory	
Course Category: Professional Core		Course Level: Practice	
L:T:P(Hours/Week) 0: 0: 3	Credits:1.5	Total Contact Hours:45	Max Marks:100

Pre-requisites

- Problem Solving using C

Course Objectives

The course is intended to:

1. Develop java program using classes and object
2. Develop java application using inheritance and interface
3. Develop java application to handle exceptions and multithreading
4. Develop simple GUI based applications

List of Exercises:

Introduction

1. Programming in Java Environment
2. Creation of classes and use of different types of functions (inclusive static methods)

Inheritance and Abstract Classes

3. Programs using inheritance
4. Programs using method overloading & overriding
5. Interfaces & Abstract classes
 - a. Developing user-defined interfaces
 - b. Use of abstract classes and methods

Exception Handling

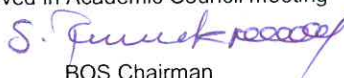
6. Exception Handling Mechanism in Java
 - a. Handling pre-defined exceptions
 - b. Creating user-defined exceptions

Multi-Threading and Files

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7. Threading
 - a. Creation of thread in Java applications
 - b. Multi-Threading
8. Programs using Files & Streams

Collections and GUI

9. Programs using Java Collection classes
10. Programs using Swing Components

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1. Develop java program using classes and object for real world problems	Apply
CO2. Develop java application for achieving code reusability using inheritance and interface	Apply
CO3. Develop java application to handle exceptions and multithreading	Apply
CO4. Develop simple GUI based applications using swing components	Apply

Reference (s):

- R1. Schildt. Herbert., "Java - The complete Reference", 9th Edition, McGraw Hill Education, 2014.
- R2. Deitel and Deitel, "Java How to Program", Prentice Hall, 10th Edition, 2014.
- R3. Timothy Budd, "An Introduction to object oriented programming", 3rd Edition, Pearson Education, 2002.

Course Articulation Matrix

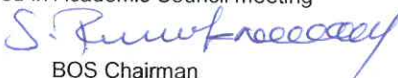
CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	-	2	2	-	-	1	2	2	-	-	2	-
CO2	2	1	-	2	2	-	-	1	2	2	-	-	2	-
CO3	2	1	-	2	2	-	-	1	2	2	-	-	2	-
CO4	2	1	-	2	2	-	-	1	2	2	-	-	2	-
CO5	2	1	-	2	2	-	-	1	2	2	-	-	2	-

High-3; Medium-2; Low-1

Passed in Board of Studies meeting


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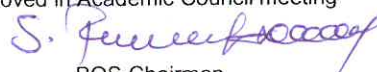
Assessment pattern

Continuous Assessment	Assessment component	CO. No.	Marks	Total Marks
	Each Lab Experiment	1,2,3,4,5	75	75
	Cycle Test 1	1,2	50	25
	Cycle Test 2	3,4	50	
Total				100

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Unit IV Testing of Hypotheses**9+3 Hours**

Sampling Distributions- Testing of hypotheses for mean, variance, proportions and differences using Normal, t, Chi-Square and F distributions – Tests for independence of attributes and Goodness of fit.

Unit V Design of Experiments**9+3 Hours**

Analysis of Variance (ANOVA)- One way Classification – Completely Randomized Design(CRD) – Two way Classification – Randomized Block Design (RBD) – Latin square.

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Calculate expectations and variances of random variables	Apply
CO2: Apply the concepts of standard distributions to solve practical problems	Apply
CO3: Calculate the correlation and regression for two variables	Apply
CO4: Test the samples based on hypothesis	Apply
CO5: Analyze the samples based on variance	Apply

Text Book(s):

- T1. Veerarajan T, "Probability, Statistics and Random process", 4th Edition, Tata McGraw-Hill, New Delhi, 2013.
- T2. Douglas C.Montgomery and George C. Runger, "Applied Statistics and Probability for Engineers", 6th Edition, Wiley India Pvt.Ltd.,2017.
- T3. Dr.J.Ravichandran, "Probability and Statistics for Engineers", 1st Edition, Wiley India Pvt.Ltd.,2010.

Reference Book(s):

- R1. R.E. Walpole, R.H. Myers, S.L. Myers, and K Ye, "Probability and Statistics for Engineers and Scientists", 9th Edition Pearson Education, Asia, 2016.
- R2. M.R. Spiegel,J. Schiller and R.A. Srinivasan, "Schaum's Outlines Probability and Statistics", 3rd Edition,Tata McGraw Hill edition, 2009.

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- R3. Morris DeGroot, Mark Schervish, "Probability and Statistics", Pearson Educational Ltd, 4th Edition, 2014.
- R4. Johnson and C.B. Gupta, "Probability and Statistics for Engineers", 9th Edition, Pearson Education, Asia, 2016.

Web References:

1. Unit I to Unit IV: <https://onlinecourses.nptel.ac.in/111105041/>
2. Unit I to Unit IV: <https://nptel.ac.in/courses/111105090/>
3. Unit V : <https://nptel.ac.in/courses/111104075/>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	-	3	2	-	-	2	2	3	-	2	-	-
CO2	3	3	-	3	2	-	-	2	2	3	-	2	-	-
CO3	3	3	-	3	2	-	-	2	2	3	-	2	-	-
CO4	3	3	-	3	2	-	-	2	2	3	-	2	-	-
CO5	3	3	-	3	2	-	-	2	2	3	-	2	-	-

High-3; Medium-2; Low-1

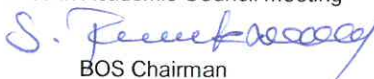
Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Comprehensive Evaluation	CCET 1	1,2	50	30
	CCET 2	3,4	50	
	Retest	1,2,3,4	50	
	CCET 3	5	50	
	Tutorial	1,2,3,4,5	30	10
	Quiz	1,2,3,4,5		
	Assignment	1,2,3,4,5		
End Semester Examination	ESE	1,2,3,4,5	100	60
Total				100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19ITCN1401	Course Title: Operating System		
Course Category: Professional Core		Course Level: Practice	
L:T:P(Hours/Week) 3: 0: 0	Credits:3	Total Contact Hours:45	Max Marks:100

Pre-requisites

- Problem Solving using C

Course Objectives

The course is intended to:

1. Explain the structure of operating systems and the concepts of the processes
2. Classify various process management using CPU scheduling, synchronization and deadlocks
3. Select the memory management schemes
4. Compare the various file system interface and its implementation
5. Identify the I/O and disk management functions in operating systems

Unit I Overview of Operating System

8 Hours

Introduction: Computer-System Architecture-Operating System Structure- Operating System Operations-Computing Environments: Virtualization. System Structures: Services-System Calls – Types of System Calls. Process Concept: Process Scheduling: Scheduling Queues-Schedulers-Context Switch– Operations on Processes – Interprocess Communication. Threads: MultiThreading Models – Threading Issues.

Unit II Process Scheduling, Synchronization and Deadlocks

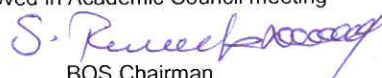
10 Hours

CPU Scheduling: Scheduling Criteria – Scheduling Algorithms – Multiple-Processor Scheduling. Synchronization: The Critical Section Problem – Peterson's Solution-Synchronization Hardware – Mutex Locks-Semaphores – Classic Problems of Synchronization. Deadlocks: System Model – Deadlock Characterization –Methods for Handling Deadlocks – Deadlock Prevention – Deadlock Avoidance –Deadlock Detection – Recovery from Deadlock.

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Unit III Memory Management**9 Hours**

Memory Management Strategies- Background – Swapping – Contiguous Memory Allocation – Segmentation- Paging – Structure of the Page Table. Virtual-Memory Management: Demand Paging – Page Replacement-Allocation of Frames-Thrashing.

Unit IV File System**9 Hours**

File-System Interface: File Concept – Access Methods – Directory and Disk Structure. Implementing File-System: File-System Implementation-Directory Implementation – Allocation Methods – Free-Space Management

Unit V Mass Storage Structure and I/O Systems**9 Hours**

Mass-Storage Structure: Disk Structure- Disk Scheduling – Disk Management – Swap-Space Management - RAID Structure. I/O Systems: I/O Hardware – Application I/O Interface – Kernel I/O Subsystem – Transforming I/O to Hardware Operations-STREAMS. Case Study-Linux System : Design Principles - Kernel Modules - Process Management – Scheduling - Memory Management - File System - Input-Output - Inter-process Communication.

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Explain the structure of operating systems and the concepts of the processes for process scheduling	Understand
CO2: Classify various process management using CPU scheduling, synchronization and deadlocks for concurrently executing the processes	Apply
CO3: Select the memory management schemes to improve both the utilization of the CPU and the speed of its response to its users	Apply
CO4: Compare the various file system interface and its implementation for on-line storage and access to both data and programs	Apply
CO5: Identify the I/O and disk management functions in operating systems for device management	Apply

Text Book(s):

T1. Silberschatz, Galvin, and Gagne, "Operating System Concepts", 9th Edition, Wiley India Edition, New Delhi 2015.

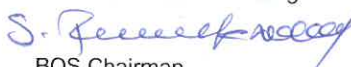
Reference Book(s):

R1. Andrew S. Tanenbaum, "Modern Operating Systems", 4th Edition, Pearson Education/PHI, New Delhi 2014.

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 BOS Chairman

- R2. Gary Nutt, "Operating Systems", 3rd Edition, Pearson Education, New Delhi, 2009.
 R3. Harvey M. Deital, "Operating Systems", 3rd Edition, Pearson Education, New Delhi, 2009.
 R4. Charles Crowley, "Operating Systems A Design –Oriented Approach", Tata McGraw Hill edition, New Delhi,2002.

Web References:

1. <http://codex.cs.yale.edu/avi/os-book/OS9>
2. <http://fivedots.coe.psu.ac.th/~cj/os/slides/slide-ppt.html>
3. <http://www.wiley.com/college/silberschatz6e/0471417432/>
4. <http://engineeringppt.blogspot.in/2009/07/operating-system-concepts-8th-edition.html>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	1	-	2	1	2	-	2	2	-
CO2	3	2	2	2	3	1	-	2	1	2	-	2	2	-
CO3	3	2	2	2	3	1	-	2	1	2	-	2	2	-
CO4	3	2	2	2	2	1	-	2	1	2	-	2	2	-
CO5	3	2	2	2	2	1	-	2	1	2	-	2	2	-

High-3; Medium-2; Low-1

Assessment pattern

	Assessment Component	CO .No.	Marks	Total
Continuous Assessment	CCET 1	1,2	50	30
	CCET 2	3,4	50	
	CCET 3	5	50	
	TQA	1,2,3,4,5	30	10
End Semester Examination	ESE	1,2,3,4,5	100	60
Total				100

Passed in Board of Studies meeting


BOS Convener

Approved in Academic Council meeting


BOS Chairman

Course Code: 19ITCN2401		Course Title: Computer Networks	
Course Category: Professional Core		Course Level: Practice	
L:T:P(Hours/Week) 3: 0: 2	Credits:4	Total Contact Hours:75	Max. Marks:100

Pre-requisites

- Problem Solving using C

Course Objectives

The course is intended to:

1. Emulate the OSI and TCP/IP layers
2. Identify the roles of data link control protocols
3. Explain the network layers working principles
4. Analyze the transport layer functionalities
5. Describe the application layer functionalities

Unit I Introduction 9 Hours

Data Communications - Networks - Network Types - Standards and Administration - Protocol Layering – The OSI Model – TCP/IP Protocol Suite - Transmission media - Guided Media - Unguided Media.

Unit II Data Link Layer 9 Hours

Link Layer Introduction – Addressing - Address Resolution Protocol - Block Coding – Cyclic Redundancy Check – Checksum - Data Link Control services - Stop and Wait Protocol – Go Back N ARQ - Selective Repeat ARQ.

Unit III Network Layer 9 Hours

Network Layer Services - Packet Switching-Network Layer Performance - IPv4 Addresses – Forwarding of IP packets - Internet Protocol – IP Routing Option - ICMPv4 - Distance Vector Routing - Link State Routing - IPv6 Protocols.

Unit IV Transport Layer 9 Hours

Transport Layer Services – Connectionless and Connection - Oriented Protocols - User Datagram Protocol – Transmission Control Protocol - TCP Services – TCP Features – Segment – TCP Connection Establishment and Termination – TCP Congestion Control.

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BOS Chairman

Unit V Application Layer**9 Hours**

Client Server Programming - World Wide Web - Hyper Text Transfer Protocols - FTP – Electronic Mail - Telnet – Secure Shell - Domain Name Space - Concept of SDN.

List of Exercises**30 Hours**

1. Network trouble-shooting and performance monitoring using ipconfig, ping, netstat commands
2. Visualization of packet flow using Wireshark
3. Interpret the working principles of address resolution protocol using Wireshark
4. Examine IP traffic and its routing options using Wireshark
5. Analyze the TCP connection establishment and termination using Wireshark
6. Configure LAN either using GNS3 or NS2 for generation of data traffic

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Emulate the layers of OSI and TCP/IP networks	Analyze
CO2: Identify the solution for the error control and flow control problems	Analyze
CO3: Explain the working principles of IP layer and its routing algorithms	Evaluate
CO4: Analyze the functionalities of transport layer protocols and its congestion control mechanism	Analyze
CO5: Describe the functionalities of application layer protocols	Analyze

Text Book(s):

T1. Behrouz A. Forouzan, "Data communication and Networking", 5th Edition, Tata McGraw-Hill Publishing Co. Pvt., Ltd., New Delhi 2014.

Reference Book(s):

- R1. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", 6th Edition, Pearson Education, New Delhi 2012.
- R2. Andrew S. Tanenbaum, "Computer Networks", 5th Edition, Prentice Hall, New Delhi, 2010.
- R3. William Stallings, "Data and Computer Communication", 10th Edition, Pearson Education, New Delhi 2013.

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R4. Thomas D. Nadeau, Ken Gray, "SDN: Software Defined Networks: An Authoritative Review of Network Programmability Technologies", 1st Edition, O'Reilly Media, 2013.

Web References:

1. http://highered.mheducation.com/sites/0073376221/student_view0/index.html
2. <http://nptel.ac.in/courses/106105081/1>
3. <http://www-net.cs.umass.edu/kurose-ross-ppt-6e/>
4. <http://iiscs.wssu.edu/drupal/node/4643>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	3	3	-	-	-	2	-	1	-	2	-
CO2	3	2	-	3	3	-	-	-	2	-	1	-	2	-
CO3	3	3	-	3	3	-	-	-	2	-	1	-	2	-
CO4	3	2	-	3	3	-	-	-	2	-	1	-	2	-
CO5	3	3	-	3	3	-	-	-	2	-	1	-	2	-

High-3; Medium-2; Low-1

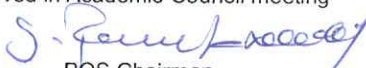
Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment - Practical	1,2,3,4,5	75	10
	Final Assessment - Practical	1,2,3,4,5	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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BOS Chairman

Course Code: 19ITCN2402		Course Title: Database Management Systems	
Course Category: Professional Core		Course Level: Practice	
L:T:P(Hours/Week) 3:0:3	Credits:4.5	Total Contact Hours:90	Max. Marks:100

Pre-requisites

- Data Structures using C

Course Objectives

The course is intended to:

1. Construct relational databases for the given application.
2. Build SQL queries to manipulate the data in the database.
3. Design the databases with efficient storage space using normalization techniques.
4. Use correct concurrency control protocols to ensure the ACID property of transaction.
5. Build NoSQL queries using MongoDB to deal the unstructured data.

Unit I Introduction

9 Hours

Purpose of Database System – Views of data – Database Languages –Database System Architecture – Database users and Administrator – Applications of DBMS-Structure of Relational Databases-Database Schema-Keys-Schema Diagrams-Relational Algebra.

Unit II SQL

9 Hours

Overview of SQL – Integrity Constraints –SQL Data Types and Schemas-Index Definition in SQL – Set Operations-Aggregate Functions-Nested Sub queries-Accessing SQL from a Programming Language-Functions and Procedures-Triggers.

Unit III Database Design

9 Hours

ER Model– Complex Attributes– Mapping Cardinalities– Reducing E-R Diagrams to Relational Schemas–Functional Dependencies – Non-loss Decomposition – Dependency Preservation – First, Second, Third Normal Forms – Boyce/Codd Normal Form– Fourth Normal Form.

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Unit IV Transaction**9 Hours**

Transaction Concepts – Transaction Recovery – ACID Properties– Concurrency – Need for Concurrency– Lock Based Protocols– Deadlock Handling –Timestamp Based Protocols – Validation-Based Protocols– Serializability.

Unit V Query Processing and Optimization**9 Hours**

Indexing – Ordered Indices– B+ Tree Index Files– Hash Indices–Query Processing –Query Optimization – Introduction to Distributed Databases- Introduction to No SQL- Mongo DB- Creating and Deleting Documents- Querying.

List of Exercises**45 Hours**

(Exercises are to be carried out in MySQL for RDBMS and MongoDB for NoSQL with required front end software)

1. DDL, DML, DCL and TCL operations in Relational DataBase Management Systems.
2. Retrieving Data from a Database using Clause, Aggregate Functions, Joins, Views and Sub queries.
3. Write a program to implement trigger.
4. Write a program to implement stored procedure.
5. Working with NoSQL Databases (MongoDB).
6. Build a GUI to any one of the following applications with back-end connectivity.
 - Library Information system
 - Students information system
 - Ticket Reservation system
 - Hotel Management System
 - Hospital Management System
 - Inventory Control
 - Retail Shop Management
 - Employee Information System
 - Payroll system
 - And any other similar system

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Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1. Construct relational databases for the given application	Apply
CO2. Build SQL queries to manipulate the data in the database	Apply
CO3. Design the databases with efficient storage space using normalization techniques	Apply
CO4. Use correct concurrency control protocols to ensure the ACID property of transaction	Apply
CO5. Construct relational databases for the given application	Apply

Text Book(s):

T1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", Seventh Edition, Tata McGraw Hill, March 2019.(Unit I - IV)

T2. Kristina Chodorow, "Mongo DB: The Definitive Guide", Second Edition, O'reilly Publications, 2013 (Unit V)

Reference Book(s):

R1. Raghu Ramakrishnan, "Database Management Systems", Fourth Edition, McGraw-Hill Publications, 2015.

R2. Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", Sixth Edition, Pearson, 2011.

Web References:

1. www.tutorialspoint.com

Course Articulation Matrix

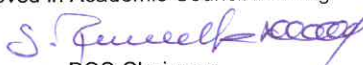
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	1	1	1	3	2	2	2	3	2
CO2	3	2	2	2	2	1	1	1	3	2	2	2	3	2
CO3	3	2	2	2	2	1	1	1	3	2	2	2	3	2
CO4	3	2	2	2	2	1	1	1	3	2	2	2	3	2
CO5	3	2	2	2	2	1	1	1	3	2	2	2	3	2

High-3; Medium-2; Low-1

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Assessment pattern

	Assessment Component	CO. No.	Marks	Total
Continuous Assessment	CCET I	1,2	50	20
	CCET II	3,4	50	
	CCET III	5	50	
	Continuous Assessment - Practical	1,2,3,4,5	75	10
	Final Assessment - Practical	1,2,3,4,5	50	10
End Semester Examination	ESE	1,2,3,4,5	100	60
			Total	100

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BOS Chairman

Course Code: 19ITCN4401		Course Title: Programming with Python Laboratory	
Course Category: Professional Core		Course Level: Practice	
L: T: P (Hours/Week) 1: 0: 3	Credits:2.5	Total Contact Hours: 60	Max Marks:100

Pre-requisites

- Problem solving using C
- Object Oriented Programming using Java

Course Objectives

The course is intended to:

1. Develop Python programs using variables and statements for simple business logic
2. Utilize suitable data structures for a given problem and its constraints
3. Create classes and objects for provided business requirement
4. Create a GUI based application with data persistence using databases

Unit I Introduction to Python and Data Structures 7 Hours

Introduction to Python- Variables, Expressions and Statements – File handling operations- Conditionals - Lists- Tuples- -Dictionaries – Strings -Functions

Unit II OOPS Concepts and GUI Programming in Python 8 Hours

Classes- Creating Instance Objects- Built-In Class Attributes- Inheritance- TKinter – Widget creation- Database Connection: INSERT - READ - UPDATE - DELETE Operation-GUI application with database connection

List of Exercises 45 Hours

1. Basic exercise in Python interpreter command line
2. Write a Python program using variables, expressions & statements
3. Implement the file handling operations in Python
4. Create a Python program using List, Tuple, and Dictionary
5. Write Python program to utilize strings

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6. Write Python program to utilize pre-defined modules in IDLE environment
7. Create a python program to demonstrate OOP'S concepts
8. Design a GUI programming with Tkinter for given application
9. Create a Python program to store and process data from a database
10. Create a Python GUI application with database connection

Course Outcomes	Cognitive Level
At the end of this course, students will be able to:	
CO1: Build a console-based application using variables, expressions & functions	Apply
CO2: Develop a python application using list, tuple and dictionary	Apply
CO3: Apply object-oriented programming concepts to develop console-based applications	Apply
CO4: Develop an GUI application using Tkinter and database packages	Apply

Reference (s):

- R1. Allen Downey, "Think Python", 2nd Edition, Green Tea Press, 2012
- R2. Laura Cassell, Alan Gauld, "Python Projects", Wrox Publication, 2015

Web References:

1. <https://www.coursera.org/learn/python>
2. <https://www.fullstackpython.com/databases.html>
3. <http://www.effbot.org/tkinterbook/tkinter-index.htm>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	-	2	2	-	-	-	1	-	1	-	2	-
CO2	2	1	-	2	2	-	-	-	1	-	1	-	2	-
CO3	2	1	-	2	2	-	-	-	1	-	1	-	2	-
CO4	2	1	-	1	1	-	-	-	1	-	1	-	2	-

High-3; Medium-2; Low-1

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Assessment pattern

Continuous Assessment	Assessment component	CO. No.	Marks	Total Marks
	Each Lab Experiment	1,2,3,4,5	75	75
	Cycle Test 1	1,2	50	25
	Cycle Test 2	3,4	50	
Total				100

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Course Code: 19PSHG6002	Course Title: Universal Human Values 2 :Understanding Harmony (Common to all B.E/B.Tech Programmes)		
Course Category: Humanities		Course Level: Practice	
L:T:P (Hours/Week) 2:1: 0	Credits:3	Total Contact Hours:45	Max Marks:100

Pre-requisites

- Induction Program (UHV 1)

Course Objectives

The course is intended to:

1. Development of a holistic perspective based on self-exploration about themselves (human being), family, society and nature/existence.
2. Strengthening of self-reflection
3. Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence
4. Development of commitment and courage to act

Unit I Introduction to Value Education 6+3 Hours

Need for the Value Education; Self -exploration as the process for value education ; Continuous Happiness and Prosperity: A look at basic Human Aspirations; Right understanding: Relationship and Physical Facilities ; Happiness and Prosperity: current scenario ; Method to fulfill the Basic human aspirations

Unit II Harmony in Human Being 6+3 Hours

Human being as a co-existence of self ('I') and the material 'Body'; needs of Self ('I') and 'Body'; The Body as an instrument of 'I'; Harmony in the self ('I'); Harmony of the self ('I') with body; Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail. Programs to ensure Sanyam and Swasthya.

Unit III Harmony in the Family and Society 6+3 Hours

Harmony in the Family the basic unit of human interaction; Values in human to human relationship; Trust as the foundational values of relationship; Respect as the right evaluation ;Understanding harmony in the society (society being an extension of family); Vision for the universal human order

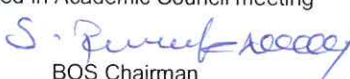
Unit IV Harmony in the Nature 6+3 Hours

Understanding the harmony in the Nature Interconnectedness, self-regulation and mutual fulfillment among the four orders of nature; Existence as Co-existence at all levels; Holistic perception of harmony in existence.

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Unit V Harmony on Professional Ethics**6+3 Hours**

Natural acceptance of human values ;Definitiveness of Ethical Human Conduct; Basic for Humanistic Education, Humanistic Constitution and Humanistic Universal Order; Competence in professional ethics ;Case study: holistic technologies, management models and production systems ;Strategy for transition towards value based life and profession

Course Outcomes	Affective Level
At the end of this course, students will be able to:	
CO1.Reflect on values, aspiration, relationships and hence identify strengths and weaknesses.	Responding
CO2.Appraise physical, mental and social wellbeing of self and practice techniques to promote wellbeing.	Responding
CO3.Value human relationships in family and society and maintain harmonious relationships.	Valuing
CO4.Respect nature and its existence for survival and sustainable of all life forms and hence practice conservation of nature	Valuing
CO5.Appreciate ethical behaviour as a result of value system in personal and professional situations	Receiving

Text Book(s):

T1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010.

Reference Book(s):

R1.Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
R2.Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
R3. The story of stuff, Annie Leonard, Free Press, New York 2010.

Web References:

1. <https://aktu.ac.in/hvpe/ResourceVideo.aspx>
2. <http://hvpenotes.blogspot.com/>
3. <https://nptel.ac.in/courses/109/104/109104068/>

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	-	1	2	2	-	-	2	-	-
CO2	-	-	-	-	-	1	2	2	2	1	-	2	-	-
CO3	-	-	-	-	-	2	2	2	2	1	-	2	-	-
CO4	-	-	-	-	-	2	2	2	2	-	-	2	-	-

High-3; Medium-2; Low-1

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Assessment Pattern

	Assessment component	CO No.	Marks	Total marks weightage
Continuous assessment	Socially relevant project/Group Activities/ Assignments	1,2,3,4,5	20	75%
	Assessment by faculty mentor		10	
	Self-assessment		10	
	Assessment by peers		10	
End Semester Examination	Part A – Objective type – 20x1=20 marks Part B – Short answer questions – 15x 2 = 30 marks Part C – Descriptive Type Questions (Either or Pattern) – 5 x 10 = 50 marks	1,2,3,4,5	100	25%
			Total	100%

Passed in Board of Studies meeting

Jaime
BOS Convener

Approved in Academic Council meeting

S. Prasad
BOS Chairman