

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus Structure : Information Technology

Synabus Structure for

S.Y. B.Tech (Information Technology) w.e.f. Academic Year 2019-20

T.Y. B.Tech (Information Technology) w.e.f. Academic Year 2020-21

Final Year B.Tech (Information Technology) w.e.f. Academic Year 2021-22



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

Information Technology

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. To build a strong foundation in mathematics, science & technology in students required to prepare them for Graduate studies and research.
2. To prepare students to apply knowledge of core & application domain, to analyze & design complex engineering problems using latest technologies & tools.
3. To develop effective communication, presentation skills and management principles in students and enable them to apply these in their work as a member or a leader in a team for managing projects.
4. To promote awareness for life-long learning, environment, sustainability, health & safety, economics etc. in students and to introduce them to professional ethics to build a good social personality.

B. Program Outcomes

Engineering Graduate will be able to –

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **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.

6. **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.
7. **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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **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.

C. Program Specific Outcomes

After completion graduates will be able to competently

1. Apply core aspects of Information Technology and various programming paradigms to facilitate problem solving through storing, retrieving, transmitting and exchanging data and information.
2. Produce designs & documents and develop applications of real world using cutting edge technologies to address individual and organizational needs.
3. Exhibit team spirit to manage complex IT projects using project management techniques and interpersonal skills supported by self-learning.



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science & Technology (Revised from 2018-19)

Choice Based Credit System structure of S.Y. B.Tech. Information Technology W.E.F. 2019-20

Semester III

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
IT211	Applied Mathematics - I	3	1	--	4	30	70	25	125
IT212	Discrete Mathematical Structure	3	1	--	4	30	70	25	125
IT213	Data Communication	3	--	--	3	30	70	--	100
IT214	Digital Techniques	4	--	--	4	30	70	--	100
IT215	Computer Graphics	3	--	--	3	30	70	--	100
IT216	Advanced C Concepts	2	-	-	2	25	-	-	25
	Sub Total	18	2	--	20	175	350	50	575
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
IT213	Data Communication	--	--	2	1	--	50	--	75
IT214	Digital Techniques	--	--	2	1	--	50	--	75
IT215	Computer Graphics	--	--	2	1	--	--	--	25
IT216	Advanced C Concepts	--	--	4	2	--	50	--	75
	Sub Total	--	--	10	5	--	150		250
	Grand Total	18	2	10	25	175	500	150	825
ENV21	Environmental Science - I	1	-	-	-	-	-	-	-

- Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)



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Faculty of Science & Technology (Revised from 2018-19)

Choice Based Credit System structure of S.Y. B. Tech. Information Technology W.E.F. 2019-20

Semester IV

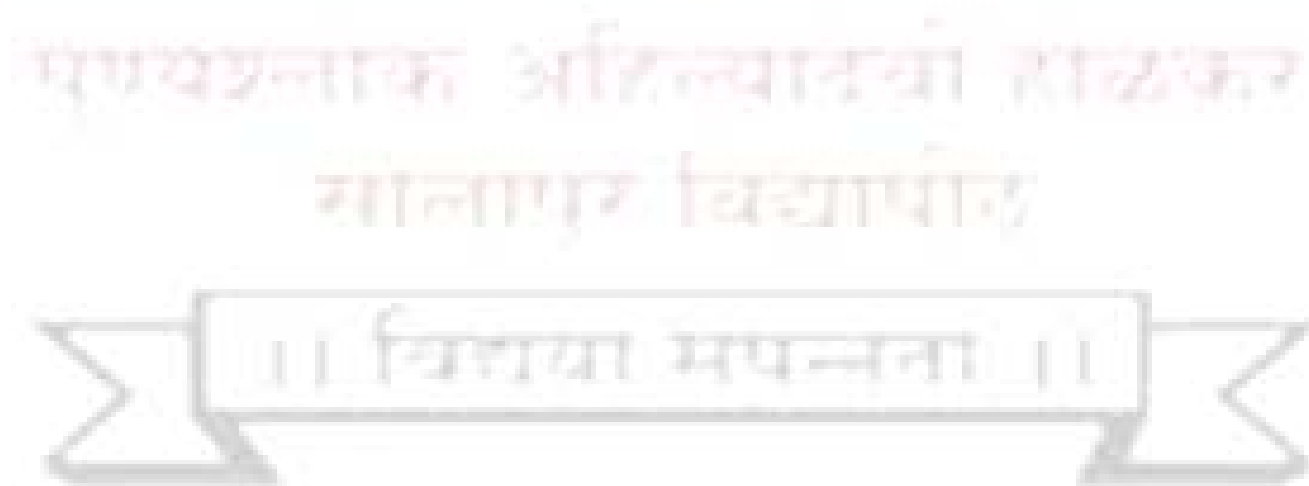
Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme				
		L	T	P		ISE	ESE	ICA	Total	
IT221	Applied Mathematics – II	3	1	--	4	30	70	25	125	
IT222	Theory of Computation	4	1	--	5	30	70	25	125	
IT223	Microprocessor	3	--	--	3	30	70	--	100	
IT224	Data Structures	3	--	--	3	30	70	--	100	
IT225	Computer Networks	3	--	--	3	30	70	--	100	
IT226	Object Oriented Programming through C ++	2	--	--	2	25	--	--	25	
	Sub Total	18	2	--	20	175	350	50	575	
Course Code	Laboratory Course Name									
							ESE			
							POE	OE		
IT223	Microprocessor	--	--	2	1	--	50	--	25	75
IT224	Data Structures	--	--	4	2	--	50	--	25	75
IT225	Computer Networks	--	--	2	1	--	-	--	25	25
IT226	Object Oriented Programming through C ++	--	--	2	1	--	50	--	25	75
	Sub Total		--	10	5		150		100	250
	Grand Total	18	2	10	25	175	500		150	825
ENV22	Environmental Science - II	1	-	-	-	-	-		-	-

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Note

For Semester III and Semester IV: The Structure of S.Y. B. Tech (CSE) and S.Y. B. Tech (IT) is same therefore, paper will be common for both the programs.

1. Student is required to study and pass Environmental Science subject in Second Year of Engineering to become eligible for award of degree.
2. Batch size for the practical /tutorial shall be of 20 students. On forming the batches, if the strength of remaining students exceeds 9, then a new batch shall be formed.
3. Vocational Training (evaluated at B.E. Part-I) of minimum 15 days shall be completed in any vacation after S.E. Part-II but before B.E. Part-I & the report shall be submitted and evaluated in B.E. Part-I
4. Student shall select one Self Learning Module at T.E. Part I and T.E. Part II each from Technical and Humanities and Social Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group
5. Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology
6. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable





Faculty of Science & Technology (Revised from 2018-19)

Choice Based Credit System Structure of T.Y. B. Tech. Information Technology W.E.F. 2020-21
Semester V

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme				
		L	T	P		ISE	ESE	ICA	Total	
IT311	Operating System	3	--	--	3	30	70	--	100	
IT312	System Software	4	--	--	4	30	70	--	100	
IT313	Design and Analysis of Algorithms	3	1	--	3	30	70	25	125	
IT314	\$ Database Engineering	3	--	--	3	30	70	--	100	
IT315	Computer Organization and Architecture	3	1	--	3	30	70	25	125	
IT316	Java Programming	2	-	-	2	25	-	-	25	
SLH31	Open Elective – I (Self Learning HSS)	--	--	--	2	--	50	--	50	
	Sub Total	18	2	–	20	175	400	50	625	
Course Code	Laboratory Course Name									
							ESE			
							POE	OE		
IT311	Operating System	–	–	2	1	–	50	--	25	75
IT312	System Software	–	–	2	1	–	--	–	25	25
IT314	\$ Database Engineering	--	--	2	1	--	50	--	25	75
IT316	Java Programming	–	–	4	2	–	50	–	25	75
	Sub Total	--	-	10	5	–	150		100	250
	Grand Total	18	2	10	25	175	550		150	875

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- \$ - The theory courses (IT314) CSE and IT are same therefore paper will common to both the program.



Faculty of Science & Technology (Revised from 2018-19)

Choice Based Credit System structure of T.Y. B. Tech. Information Technology w.e.f. 2020-21

Semester VI

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
IT321	\$ Unix Operating System	4	--	--	4	30	70	--	100
IT322	\$ Software Engineering	3	1	--	4	30	70	25	125
IT323	\$ Object Oriented Modeling and Design	3	1	--	4	30	70	25	125
IT324	\$ Artificial Intelligence	3	--	--	3	30	70	--	100
IT325	Mobile Application Development	3	--	--	3	30	70	--	100
IT326	Professional Elective -I	2	-	-	2	25	-	-	25
IT327	Professional Elective -II (Self Learning Technical)	-	--	--	2	--	50	--	50
	Sub Total	18	2	--	22	175	400	50	625
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
IT321	\$ Unix Operating System	--	--	2	1	--	--	-	25
IT324	\$ Artificial Intelligence	--	--	2	1	--	--	--	25
IT325	Mobile Application Development	--	--	2	1	--	50	--	75
IT326	Professional Elective -I	--	--	2	1	--	50	--	75
IT328	Mini Project	--	--	2	1		50	--	25
	Sub Total		--	10	5	--	150		250
	Grand Total	18	2	10	27	175	550	150	875

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\$ - These theory courses for Computer Sci. and Engineering and Information Technology are same therefore paper will common to both the program.

Open Elective – I		Professional Elective – I		Professional Elective – II	
<i>Course Code</i>	<i>Course</i>	<i>Course Code</i>	<i>Course</i>	<i>Course Code</i>	<i>Course</i>
SLH31A	Soft skills and Interpersonal Communication	IT326A	Python Programming	IT327A	Network Management
SLH31B	Human Resources Development and Organizational Behavior	IT326B	Angular JS	IT327B	Data Analytics

Note:

For Semester III and Semester IV: The Structure of S.Y. B. Tech (CSE) and S.Y. B. Tech (IT) is same therefore, paper will be common for both the programs.

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.
2. Industrial Training/Internship (evaluated at B.E. Part-I) of minimum 15 days shall be completed in any vacation after S.E. Part-II but before B.E. Part-I & the report shall be submitted and evaluated in B.E. Part-I
3. Student shall select one Self Learning Module at T.E. Part I and T.E. Part II each from Technical and Humanities and Social Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group
4. Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology
5. Minimum four assignments for Self-Learning Modules at T.E. Part I and T.E. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department
6. Project groups for B.E. (I.T.) Part I and Part II formed at T.E. (IT) Part II for seminar shall not be of more than **five** students.
7. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable





Faculty of Science & Technology (Revised from 2018-19)

Choice Based Credit System structure of Final Year B. Tech. Information Technology W.E.F. 2021-22
Semester VII

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
IT411	\$ Machine Learning	3	--	--	3	30	70	--	100
IT412	Advanced Database System	4	--	--	4	30	70	--	100
IT413	\$ Software Testing and Quality Assurance	3	-	--	3	30	70	25	125
IT414	Distributed Computing	3	--	--	3	30	70	--	100
IT415A to IT415C	Professional Elective-III	3	--	--	3	30	70	25	125
IT416A To IT416B	Professional Elective-IV	2	--	--	2	25	--	--	25
	Sub Total	18		--	18	175	350	50	575
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
IT411	\$ Machine Learning	--	--	2	1	--	--	--	25
IT412	Advanced Database System	--	--	2	1	--	50	--	75
IT414	Distributed Computing	--	--	2	1	--	--	--	25
IT416	Professional Elective-IV	--	--	2	1	--	50	--	75
IT417	Project-I	-	--	4	2	--	--	--	75
IT418	Industrial Training / Internship	--	--	--	1	--	--	--	25
	Sub Total	--	--	12	7	--	100		300
	Grand Total	18	4	8	25	175	450	250	875

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Professional <i>Elective III</i>		Professional Elective IV	
<i>Course Code</i>	<i>Course</i>	<i>Course Code</i>	<i>Course</i>
IT415A	\$ Data Mining	IT416A	C# .Net
IT415B	Image Processing	IT416B	Web Technology
IT415 C	\$ Internet of Things		



पुण्येशलाक अशिल्यादयां राज्कर
सांलापर विद्यापीठ

॥ विशया मयन्नता ॥



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Science & Technology (Revised from 2018-19)

Choice Based Credit System structure of Final Year B. Tech. Information Technology wef 2021-22

Semester VIII

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
IT421	\$ Management Information System	4	--	--	4	30	70	--	100
IT422	Information Assurance and Security	4	--	--	4	30	70	25	125
IT423A to IT 423B	Professional Elective –V	3	--	--	3	30	70	25	125
IT424A to IT424B	Open Elective – II	3	2	--	5	30	70	25	125
IT425A To IT425B	Professional Elective - VI	2	--	--	2	25	--	--	25
	Sub Total	16	2	--	18	145	280	75	500
Course Code	Laboratory Course Name								
							ESE		
							POE	OE	
IT421	\$ Management Information System	--	--	2	1	--	50	--	25
IT423A To IT423B	Professional Elective – V	--	--	2	1	--	--	--	25
IT425A To IT425B	Professional Elective - VI	--	--	2	1	--	50	--	25
IT426	Project-II	--	--	6	3	--	--	100	100
	Sub Total	--	--	12	6	--	200		175
	Grand Total	16	2	12	24	145	480	225	875

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Professional Elective – V		Open Elective – II		Professional Elective – VII	
<i>Course Code</i>	<i>Course</i>	<i>Course Code</i>	<i>Course</i>	<i>Course Code</i>	<i>Course</i>
IT423A	\$ Natural Language Processing	IT424A	Cyber Law and Ethics	IT425A	R – Programming
IT423B	Information Retrieval	IT424B	Digital and Mobile Forensics	IT425B	DevOps
IT423C	Cloud Computing		Multimedia and Animation		
IT423D	BIG data				

\$ - These theory courses for Computer Sci. and Engineering and Information Technology are same therefore paper will common to both the program.