

<b>Academic Year</b>	<b>2021-22</b>
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**B.P.H.E. Society's  
Ahmednagar College, Ahmednagar  
Internal Quality Assurance Cell  
CO, PO, and PSO Attainment Sheet**

<b>Department Name</b>	<b>Computer Science</b>
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<b>Program Name</b>	<b>M.Sc.(Computer Science)</b>
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<b>Program Outcomes(PO)</b>
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<b>PO1</b>	Enriched learning experience
<b>PO2</b>	Create technology-oriented students with the knowledge and ability to develop creative solutions
<b>PO3</b>	Better understand the effects of future developments of computer systems and technology on people and society
<b>PO4</b>	Develop skills to learn new technology
<b>PO5</b>	Grasping the concepts and issues behind its use and the use of computers.
<b>PO6</b>	
<b>PO7</b>	
<b>PO8</b>	
<b>PO9</b>	
<b>PO10</b>	
<b>PO11</b>	
<b>PO12</b>	

<b>Program Specific Outcome(PSO)</b>
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<b>PSO1</b>	To develop standard practices and techniques in software development.
<b>PSO2</b>	Students will be able to learn principles of management which includes organization, planning, product design, development, maintenance
<b>PSO3</b>	Students will be able to understand data communication concepts and its applications. Network architecture, transmission of data, OSI model

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Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUT111			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Paradigm of Programming Language		CO1	2	2	2	3	1	1	2	2
Semester No	I		CO2	3	3	2	3	2	2	2	2
Teacher Name	Shital Choudhari		CO3	2	2	2	2	2	2	1	2
Course Outcomes			CO4	3	2	3	3	2	1	2	2
	CO1	Knowledge of Separate syntax from semantics	CO5	3	2	3	2	3	1	2	2
	CO2	Learn to compare programming language designs	Average	2.60	2.20	2.40	2.60	2.00	1.40	1.80	2.00
	CO3	Understand their strengths and weaknesses									
	CO4	Enhance to learn new languages more quickly									
	CO5	Understand basic language implementation techniques									

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUT112			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Design and Analysis of Algorithm		CO1	3	3	2	2	3	2	2	2
Semester No	I		CO2	3	2	2	3	2	3	2	2
Teacher Name	Rahul Ghodake		CO3	3	2	3	2	2	1	2	2
Course Outcomes			CO4	3	2	3	2	2	2	1	2
	CO1	To select the appropriate algorithm by doing necessary analysis of algorithms	CO5	3	2	2	2	2	1	2	2
	CO2	To learn basic Algorithm Analysis techniques and understand the use of asymptotic notation	Average	3.00	2.20	2.40	2.20	2.20	1.80	1.80	2.00
	CO3	Understand the use of data structures in improving algorithm performance									
	CO4	To develop ability to understand and design algorithms in context of space and time complexity									
	CO5	Understand classification of problems									

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUT113			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Database Technologies		CO1	3	2	2	2	1	2	2	1
Semester No	I		CO2	3	2	3	2	2	1	2	2
Teacher Name	Roopali Kulkarni		CO3	3	2	2	1	2	2	1	1
Course Outcomes			CO4								
	CO1	Provide an overview of the concept of NoSQL technology	CO5								
	CO2	Provide an insight to the different types of NoSQL databases	Average	3.00	2.00	2.33	1.67	1.67	1.67	1.67	1.33
	CO3	Make the student capable of making a choice of what database technologies to use, based on their application needs									
	CO4										
	CO5										

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSDT 114C			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Web Services		CO1	3	3	3	3	2	1	2	2
Semester No	I		CO2	3	3	3	2	2	2	1	2
Teacher Name	Trupti Deochake		CO3	3	2	3	3	3	2	2	1
Course Outcomes			CO4	3	2	2	3	2	1	1	2
	CO1	To understand the details of web services technologies like WSDL,UDDI, SOAP	CO5								
	CO2	To learn how to implement and deploy web service client and server	Average	3.00	2.50	2.75	2.75	2.25	1.50	1.50	1.75
	CO3	To explore interoperability between different frameworks									
	CO4	To understand the concept of RESTful system									
	CO5										

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSDP114C			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Web Services Practical		CO1	3	3	3	3	2	3	2	2
Semester No	I		CO2	3	3	3	3	3	3	2	2
Teacher Name	Trupti Devchake		CO3								
Course Outcomes			CO4								
	CO1	To understand how to develop web services using Java/PHP/.Net	CO5								

	CO2	Provide a platform to connect with differet technologies	Average	3.00	3.00	3.00	3.00	2.50	3.00	2.00	2.00
	CO3										
	CO4										
	CO5										

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs			
Subject Code	Subject Name	Semester No		Teacher Name	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CSUP115	PPL and Database Technologies Practical	I	Shital Choudhari and Prachi Walunjkar	CO1	3	3	3	2	3	3	3	2
				CO2	3	3	3	3	2	2	2	3
				CO3								
				CO4								
				CO5								
				Average	3.00	3.00	3.00	2.50	2.50	2.50	2.50	2.50
	CO1	enhancing skills about developing applications										
	CO2	Managing and handling big data										
	CO3											
	CO4											
	CO5											

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs			
Subject Code	Subject Name	Semester No		Teacher Name	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CSUT121	Advanced Operating System	II	Prachi Walunjkar	CO1	3	3	1	1	3	1	2	1
				CO2	3	1	0	1	2	1	1	2
				CO3	3	3	2	1	2	2	1	1
				CO4	3	2	3	1	2	2	1	1
				CO5								
				Average	3.00	2.25	1.50	1.00	2.25	1.50	1.25	1.25
	CO1	Teaches Advanced Operating Systems Concepts using Unix/Linux. Describes the programming interface to the Unix/Linux system - the system call interface.										
	CO2	Writing C programs that run under Unix/Linux										
	CO3	provides an understanding of the functions and functional modules of Operating Systems.										
	CO4	Provides the concepts underlying in the design and implementation of Operating Systems.										
	CO5											

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs			
Subject Code	Subject Name	Semester No		Teacher Name	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CSUT122	Mobile Technologie	II	Sarika Kulkarni	CO1	3	2	3	2	2	2	2	1
				CO2	3	3	3	3	3	1	2	1
				CO3	3	3	2	2	3	1	2	2

Course Outcomes			CO4	3	3	2	3	2	2	1	1
	CO1	To impart basic understanding of the wireless communication systems	CO5								
	CO2	To expose students to various aspects of mobile and ad-hoc networks.	Average	3.00	2.75	2.50	2.50	2.50	1.50	1.75	1.25
	CO3	Understand the issues relating to Wireless applications									
	CO4	Understand the Mobile security									
	CO5										

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUT123	Subject Name		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Software Project Management		CO1	3	3	1	2	1	2	2	1
Semester No	II		CO2	3	1	2	1	2	1	2	2
Teacher Name	Trupti Deochake		CO3	3	2	2	2	2	1	2	2
Course Outcomes			CO4	2	1	2	1	1	2	2	1
	CO1	Enhanced skills that are required to ensure successful medium and large scale software projects.	CO5								
	CO2	Requirements Elicitation, Project Management, Verification & Validation and Management of Large Software Engineering Projects	Average	2.75	1.75	1.75	1.50	1.50	1.50	2.00	1.50
	CO3	Learn to select and apply project management techniques for process modeling, planning, estimation, process metrics and risk management;									
	CO4	Software verification and validation using inspections, design and execution of system test cases.									
	CO5										

Class		Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSDT124A	Subject Name		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Project		CO1	3	3	2	1	1	3	2	2
Semester No	II		CO2	3	2	2	1	1	2	2	2
Teacher Name	Trupti Deochake		CO3	3	3	2	0	1	2	3	3
Course Outcomes			CO4	3	3	3	3	2	2	2	3
	CO1	Time, cost estimation of project	CO5								
	CO2	how to develop real project	Average	3.00	2.75	2.25	1.25	1.25	2.25	2.25	2.50
	CO3	designing of software									
	CO4	coding and testing of software									
	CO5										

Class		Msc Computer Science-I		Program Outcomes					PSOs		
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Subject Code	CSDP124A	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Project Related Assignments	CO1	3	1	3	2	1	2	3	3
Semester No	II	CO2	3	2	3	2	1	3	2	2
Teacher Name	Trupti Deochake	CO3	3	1	2	1	1	3	2	2
Course Outcomes		CO4								
	CO1	excursion of best logic	CO5							
	CO2	finding the solution of any coding problem	Average	3.00	1.33	2.67	1.67	1.00	2.67	2.33
	CO3	user friendly designing of code								
	CO4									
	CO5									

Class	Msc Computer Science-I	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUP125		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Practical on Advanced OS & Mobile Technologies	CO1	1	1	1	1	1	2	2	2
Semester No	II	CO2	1	2	1	2	2	3	3	3
Teacher Name	Prachi Walunjkar and Sarika Kulkarni	CO3	1	2	1	1	1	2	2	2
Course Outcomes		CO4	3	3	3	2	3	3	3	3
	CO1	Learn basic skills of operating skills	CO5	3	2	2	2	2	3	3
	CO2	Finding and execution of C libraries	Average	1.80	2.00	1.60	1.60	1.80	2.60	2.60
	CO3	Creating Small operating Software application								
	CO4	Creating small mobile applications								
	CO5	Confugring new apps using Adroid operating System								

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Class		Course Outcomes	Program Outcomes					PSOs		
Subject Code	M.Sc(Computer Science)- II		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	CSUT231	Software Architecture and Design Patterns								
Semester No	III									
Teacher Name	Trupti Deochake									
Course Outcomes										
	CO1	To introduce students to the basic concepts and techniques of SADP	1	2	2	2	2	3	2	2
	CO2	To write java programs using Design Pattern and Frameworks to create reusable and flexible software systems.	2	2	2	3	2	2	2	3
	CO3	Use of patterns and architectures for solving practical problems.	2	2	2	2	2	2	1	1
	CO4	To understand about design pattern	2	2	2	2	2	2	2	2
	CO5	To understand about the process of deploying web apps using specific Frameworks.	1	3	2	2	2	2	1	2
Average			1.60	2.20	2.00	2.20	2.00	2.20	1.60	2.00

Class		Course Outcomes	Program Outcomes					PSOs		
Subject Code	M.Sc(Computer Science)- II		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	CSUT232	Machine Learning								
Semester No	III									
Teacher Name	Sarika Kulkarni									
Course Outcomes										
	CO1	To introduce students to the basic concepts and techniques of Machine Learning	2	2	2	3	3	3	3	3
	CO2	To write python programs using machine learning algorithms for solving practical problems.	3	3	3	3	3	3	3	3
	CO3	To understand about Machine Learning Library and use cases.	3	3	3	3	3	3	3	3
	CO4	To understand about the process of deploying ML model.	3	3	3	3	3	3	3	3
	CO5									
Average			2.75	2.75	2.75	3.00	3.00	3.00	3.00	3.00

Class		M.Sc(Computer Science)- II	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUT233	PO1		PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	
Subject Name	Web Frameworks	CO1	1	2	1	1	1	2	2	2	
Semester No	III	CO2	2	2	1	2	1	1	2	2	
Teacher Name	Prachi Walunjkar	CO3	1	2	2	1	2	2	1	2	
Course Outcomes		CO4	1	1	1	2	1	2	1	1	
	CO1	Students will be ready with the technology which is used widely in Industry as a part of full stack developer	CO5	1	2	2	2	1	1	2	2
	CO2	Students will know the powerful way to develop the web application in Python.	Average	1.20	1.80	1.40	1.60	1.20	1.60	1.60	1.80
	CO3	Students will understand what really the asynchronous programming.									
	CO4	Build and deploy robust Django Web App.									
	CO5	Integrate with Restful web services.									

Class		M. Sc. (Computer Science) II	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSDT234C	PO1		PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	
Subject Name	Project	CO1	3	3	2	1	1	3	2	2	
Semester No	III	CO2	3	2	2	1	1	2	3	2	
Teacher Name	Trupti Deochake	CO3	3	3	2	0	1	3	2	2	
Course Outcomes		CO4	3	3	3	3	2	2	2	2	
	CO1	Time, cost estimation of project	CO5								
	CO2	how to develop real project	Average	3.00	2.75	2.25	1.25	1.25	2.50	2.25	2.00
	CO3	designing of software									
	CO4	coding and testing of software									
	CO5										

Class		M. Sc. (Computer Science) II	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSDP234C	PO1		PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	
Subject Name	Project Related Assignments	CO1	3	1	3	2	1	2	2	1	
Semester No	III	CO2	3	2	3	2	1	1	2	3	
Teacher Name	Trupti Deochake	CO3	3	1	2	1	1	2	2	3	
Course Outcomes		CO4									
	CO1	excursion of best logic	CO5								
	CO2	finding the solution of any coding problem	Average	3.00	1.33	2.67	1.67	1.00	1.67	2.00	2.33
	CO3	user friendly designing of code									
	CO4										



CO5
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Class		M. Sc. (Computer Science) II	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUP235			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Practical on CSUT231, CSUT232 and CSUT233		CO1	1	2	2	2	2	2	1	1
Semester No	III		CO2	3	2	2	2	3	2	3	2
Teacher Name	Prachi Walunjkar, Sarika Kulkarni, Shital Choudhari		CO3	2	3	2	2	2	2	2	3
Course Outcomes			CO4	3	3	3	3	2	3	3	3
	CO1	Able to use specific frameworks as per applications need	CO5								
	CO2	Design java application using design pattern techniques.	Average	2.25	2.50	2.25	2.25	2.25	2.25	2.25	2.25
	CO3	Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problem.									
	CO4	Able to estimate Machine Learning models efficiency using suitable metrics.									
	CO5										

Class		M. Sc. (Computer Science) II	Course Outcomes	Program Outcomes					PSOs		
Subject Code	CSUIT241			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
Subject Name	Industrial Training /Institutional project		CO1	2	2	2	2	2	3	2	2
Semester No	IV		CO2	3	3	2	2	2	2	3	2
Teacher Name	Trupti Deochake, Razak Sayyed		CO3	3	2	3	2	3	2	3	3
Course Outcomes			CO4	3	2	2	2	2	2	2	3
	CO1	"Select comprehensive learning platform students can enhance their employ ability skills and become job ready along with real corporate exposure;	CO5	3	2	2	2	3	2	3	3
	CO2	Apply the theory knowledge to get hands-on experience in the field of computer science;	Average	2.80	2.20	2.20	2.00	2.40	2.20	2.60	2.60
	CO3	Appreciate the ethical basis of professional practice in relevant industry									
	CO4	Describe with all the latest changes in technological world;									
	CO5	Interpret options in career plans and goals.									

**CO-PO Mapping**

		Course	PO1	PO2	PO3	PO4	PO5
FY	FY	1 CSUT111	2.60	2.20	2.40	2.60	2.00
		2 CSUT112	3.00	2.20	2.40	2.20	2.20
		3 CSUT113	3.00	2.00	2.33	1.67	1.67
		4 CSDT 114C	3.00	2.50	2.75	2.75	2.25
		5 CSDP114C	3.00	3.00	3.00	3.00	2.50
		6 CSUP115	3.00	3.00	3.00	2.50	2.50
		7 CSUT121	3.00	2.25	1.50	1.00	2.25
		8 CSUT122	3.00	2.75	2.50	2.50	2.50
		9 CSUT123	2.75	1.75	1.75	1.50	1.50
		10 CSDT124A	3.00	2.75	2.25	1.25	1.25
		11 CSDP124A	3.00	1.33	2.67	1.67	1.00
		12 CSUP125	1.80	2.00	1.60	1.60	1.80
SY	SY	1 CSUT231	1.60	2.20	2.00	2.20	2.00
		2 CSUT232	2.75	2.75	2.75	3.00	3.00
		3 CSUT233	1.20	1.80	1.40	1.60	1.20
		4 CSDT234C	3.00	2.75	2.25	1.25	1.25
		5 CSDP234C	3.00	1.33	2.67	1.67	1.00
		6 CSUP235	2.25	2.50	2.25	2.25	2.25
		7 CSUIT241	2.80	2.20	2.20	2.00	2.40

**CO-PO ATTAINMENT**

PO1	PO2	PO3	PO4	PO5
1.906667	1.613333	1.76	1.906666667	1.466667
3	2.2	2.4	2.2	2.2
1.08	0.72	0.84	0.6	0.6
2.36	1.966667	2.163333	2.163333333	1.77
3	3	3	3	2.5
1.56	1.56	1.56	1.3	1.3
1.56	1.17	0.78	0.52	1.17
1.56	1.43	1.3	1.3	1.3
1.43	0.91	0.91	0.78	0.78
2.04	1.87	1.53	0.85	0.85
0.6	0.266667	0.533333	0.333333333	0.2
1.512	1.68	1.344	1.344	1.512
1.6	2.2	2	2.2	2
2.75	2.75	2.75	3	3
1.2	1.8	1.4	1.6	1.2
0.92	0.843333	0.69	0.383333333	0.383333
2.04	0.906667	1.813333	1.133333333	0.68
2.01	2.233333	2.01	2.01	2.01
2.352	1.848	1.848	1.68	2.016

**CO-PO ATTAINMENT**

PO1	PO2	PO3	PO4	PO5
73.33333	73.33333	73.33333	73.33333	73.33333
100	100	100	100	100
36	36	36	36	36
78.66667	78.66667	78.66667	78.66667	78.66667
100	100	100	100	100
52	52	52	52	52
52	52	52	52	52
52	52	52	52	52
52	52	52	52	52
68	68	68	68	68
20	20	20	20	20
84	84	84	84	84
100	100	100	100	100
100	100	100	100	100
100	100	100	100	100
30.66667	30.66667	30.66667	30.66667	30.66667
68	68	68	68	68
89.33333	89.33333	89.33333	89.33333	89.33333
84	84	84	84	84

**CO-PSO MAPPING**

**CO-PSO ATTAINMENT**

**Percentage CO-PSO ATTAINMENT**

	Course	PSO1	PSO2	PSO3
1	CSUT111	1.40	1.80	2.00
2	CSUT112	1.80	1.80	2.00
3	CSUT113	1.67	1.67	1.33
4	CSDT 114C	1.50	1.50	1.75
5	CSDP114C	3.00	2.00	2.00
6	CSUP115	2.50	2.50	2.50
7	CSUT121	1.50	1.25	1.25
8	CSUT122	1.50	1.75	1.25
9	CSUT123	1.50	2.00	1.50
10	CSDT124A	2.25	2.25	2.50
11	CSDP124A	2.67	2.33	2.33
12	CSUP125	2.60	2.60	2.60
1	CSUT231	2.20	1.60	2.00
2	CSUT232	3.00	3.00	3.00
3	CSUT233	1.60	1.60	1.80
4	CSDT234C	2.50	2.25	2.00
5	CSDP234C	1.67	2.00	2.33
6	CSUP235	2.25	2.25	2.25
7	CSUIT241	2.20	2.60	2.60

	Course	PSO1	PSO2	PSO3
	CSUT111	1.026667	1.32	1.466667
	CSUT112	1.8	1.8	2
	CSUT113	0.6	0.6	0.48
	CSDT 114C	1.18	1.18	1.376667
	CSDP114C	3	2	2
	CSUP115	1.3	1.3	1.3
	CSUT121	0.78	0.65	0.65
	CSUT122	0.78	0.91	0.65
	CSUT123	0.78	1.04	0.78
	CSDT124A	1.53	1.53	1.7
	CSDP124A	0.533333	0.466667	0.466667
	CSUP125	2.184	2.184	2.184
	CSUT231	2.2	1.6	2
	CSUT232	3	3	3
	CSUT233	1.6	1.6	1.8
	CSDT234C	0.766667	0.69	0.613333
	CSDP234C	1.133333	1.36	1.586667
	CSUP235	2.01	2.01	2.01
	CSUIT241	1.848	2.184	2.184

	Course	PSO1	PSO2	PSO3
	CSUT111	73.33333	73.33333	73.33333
	CSUT112	100	100	100
	CSUT113	36	36	36
	CSDT 114C	78.66667	78.66667	78.66667
	CSDP114C	100	100	100
	CSUP115	52	52	52
	CSUT121	52	52	52
	CSUT122	52	52	52
	CSUT123	52	52	52
	CSDT124A	68	68	68
	CSDP124A	20	20	20
	CSUP125	84	84	84
	CSUT231	100	100	100
	CSUT232	100	100	100
	CSUT233	100	100	100
	CSDT234C	30.66667	30.66667	30.66667
	CSDP234C	68	68	68
	CSUP235	89.33333	89.33333	89.33333
	CSUIT241	84	84	84

FY

SY