

1. Department: Computer Science

A. Name of the Head of the Department: Dr Shubhangi Bhatambrekar

B. Program Specific Outcome (PSO)- M.Sc.(Computer Science)-PG

Sr. No.	Objectives/ Outcomes
1	To enrich specific knowledge in areas like Artificial Intelligence, Business Intelligence Soft Computing, DataMining and Data Warehouse, Web Services, Mobile Computing, Digital Image processing ,Software Metrics and Project Management and Core Computing subjects.
2	To introduce the concepts of all dimensional software application and projects.
3	To understand advanced subjects with following: 1) Demonstrate all programming and theoretical concepts with the use of ICT 2) Development of in-house applications in terms of projects 3) Aware them to publish their work in reputed journals 4) Give them Industrial exposure in terms of six months internship in IT Industry 5) Interaction with IT experts and IT visits
4	To prepare for placement by developing personality and soft skills.
5	To build up programming, analytical and logical thinking abilities.
6	To make them employable according to current demand of IT Industry.



**Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
DEPARTMENT OF COMPUTER SCIENCE**

CS- 101

Course: Principles of Programming Languages

Name of the Teacher: Mrs. Deepa Deshpande

Class: M.Sc.I (Computer Science) Pattern: 2013 (Semester I)

Course Outcomes: PPL

- CO1) Students will prepare themselves to think about programming languages analytically. They will be able to separate syntax from semantics.
- CO2) Students will be able to understand how language features work like Data types, control flow, Subroutines, Data abstraction etc. students will Learn new languages more quickly and Use standard vocabulary when discussing languages.
- CO3) Students will develop a greater understanding of the issues involved in programming language design and implementation. Students will familiar with design issues of object -oriented and functional languages.
- CO4) Students will learn Functional, Logic Languages like Prolog, Lisp.
- CO5) Students will know how to analyze semantic issues associated with function implementations, including variable binding, scoping rules, parameter passing etc.

Formative and summative Evaluation

- 1) **Formative Evaluation: Knowledge, Understanding, Application, Skill**
- 2) **Summative Evaluation: Term End Examination and University Examination**

Development of E-content/ E-Module and made available on Google and Website

- Educational Link:**
- 1 https://www.tutorialspoint.com/prolog_in_artificial_intelligence/index.asp
 2. <https://www.youtube.com/watch?v=jHnV1RGYzn8>
 3. https://en.wikipedia.org/wiki/Object-oriented_programming
 4. <http://www.gigamonkeys.com/book/>

References:

- Scott Programming Language Pragmatics, 3e(With CD) ISBN9788131222560 Kaufmann publishers, An Imprint of Elsevier, USA
- T2. Concepts of Programming Languages, Eighth Edition by Robert W. Sebesta, Pearson Education.
- T3. Introduction to Turbo Prolog by Carl Townsend
- T4. LISP 3rd edition by Patrick Henry Winston & Berthold Klaus Paul Horn (BPB)
- Programming Languages: Principles and Paradigms, M. Gabbrielli, S. Martini, Springer, ISBN: 9781848829138



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**CS- 102 (Paper II)
Course: Advance Networking**

**Name of the Teacher: Satish Ambike
Class: MSc I (Computer Science) Pattern: 2013 (Semester I)**

Course Outcomes: Advance Networking

- CO1) Students will understand the basic components of Networking**
- CO 2) Students will understand how these components are used in different project.**
- CO 3) Students will understand how to write research paper for innovative idea .**
- CO 4) Cryptography technique knowledge for understanding various Algorithm for security.**
- CO 5) Internet Security protocol used for ebusiness and eBanking security.**

Formative and summative Evaluation

- 1) Formative Evaluation: Knowledge, Understanding, Application, Skill**
- 2) Summative Evaluation: Term End Examination and University Examination**

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- Educational Link:**
- 1 <https://www.youtube.com/watch?v=GmoUtoFLb98>**
 - 2. https://www.youtube.com/watch?v=LEZ__6RbrmM**
 - 3. <https://en.wikipedia.org/wiki/Multimedia>**
 - 4. <https://www.studytonight.com/computer-networks/>**

References:

- T1 : TCP / IP Protocol Suite Fourth Edition – Behrouz A. Forouzan**
 - T2 : Computer Networks Fourth Edition – Andrew Tanenbaum**
 - T3 : Cryptography and Network Security Second Edition – Atul Kahate**
- Supplementary but very useful references/texts
(Few of the references below contain latest research and trends related to Networks and Security and are useful for seminar/ presentations by the students.)
- 1. Computer Network Security, Kizza, Springer, 9780387204734**
 - 2. Guide to Computer Network Security, Kizza, Springer, 978-1-84800-916-5**
 - 3. Network Security, Harrington, Elsevier, ISBN 9788131202166**

Project: Study of network and Internet Security



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CS- 103 (Paper I)
Course: Distributed Database Concepts

Name of the Teacher: Arote Nilesh D.
Class: MSc I (Computer Science) Pattern: 2013 (Semester I)

Course Outcomes: Distributed Database Concepts

CO1) Students will understand the basic concepts of Distributed Database.

CO 2) Students will understand how these concepts are used in different project where the data is concern.

CO 3) Students will understand how to store, manipulate and maintain the data if it is Distributed over multiple sites at time.

CO 4) Student will understand which is the best as well feasible technique to store data into database.

CO 5) Student will understand how to recover from the failure by using algorithms, if any occurs.

Formative and summative Evaluation

- 1) Formative Evaluation: Knowledge, Understanding, Application, Skill**
- 2) Summative Evaluation: Term End Examination and University Examination**

Development of E-content/ E-Module and made available on Google and Website

Educational Link:

- 1. www.tutorialspoint.com**
- 2. www.quora.com**
- 3. www.w3school.com**

References:

- Book 1: Principles of Distributed Database Systems; 2nd Edition By M. Tamer Ozsu and Patrick Valduriez Publishers: Pearson Education Asia ISBN: 81-7808-375-2**
- Book 2.Distributed Database; Principles & Systems By Stefano Ceri and Giuseppe Pelagatti Publications: McGraw-Hill International Editions ISBN: 0-07-010829-3**
- Book 3.Database systems (2nd edition) By Raghuramakrishnan and Johannes**



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CS- 104

Course: Design & Analysis of Algorithm

Name of the Teacher: Meenal Jabde

Class: M.Sc. I (Computer Science) Pattern: 2013 (Semester I)

Course Outcomes: DAA

- CO1) Students will learn fundamental concepts of asymptotic notations of an algorithm, Space & Time Complexity, Searching & Sorting Algorithms, Divide and Conquer techniques.
- CO2) Students will know various design and analysis techniques such as greedy algorithms, dynamic programming.
- CO3) Student will understand the techniques used for designing of different graph algorithms.
- CO4) Students will learn how to apply backtracking, branch and bound techniques for real time problems.
- CO5) Students will know the concepts of P, NP and NP-Complete problems.

Formative and summative Evaluation

- 1) **Formative Evaluation: Knowledge, Understanding, Application, Skill**
- 2) **Summative Evaluation: Term End Examination and University Examination**

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- Educational Link:**
- 1 <https://www.tutorialspoint.com/>
 2. https://www.youtube.com/watch?v=LEZ__6RbrmM
 3. <https://en.wikipedia.org/wiki/Multimedia>
 4. <https://www.geeksforgeeks.org/fundamentals-of-algorithms>

References:

- T1.** Ellis Horowitz, Sartaj Sahni & Sanguthevar Rajasekaran
, Computer Algorithms, Galgotia.
T2 T. Cormen, C. Leiserson, & R. Rivest, Algorithms, MIT
Press, 1990 1

- 1) A. Aho, J. Hopcroft, & J. Ullman, The Design and Analysis of Computer Algorithms,
- 2) Donald Knuth, The Art of Computer Programming (3 vols., various editions, 1973-81), Addison Wesley
- 3) The Algorithm Manual, Steven Skiena, Springer ISBN: 9788184898651
- 4) Graphs, Networks and Algorithms, Jungnickel, Springer, ISBN: 3540219056



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**CS- 105 (Paper I)
Course: Networking Programming**

**Name of the Teacher: Arote Nilesh D.
Class: MSc I (Computer Science) Pattern: 2013 (Semester I)**

Course Outcomes: Advance Networking

CO1) Students will understand the basic components of Network Programming

CO 2) Students will understand how these components are used in different project on networks using client-server Technology.

CO 3) Students will understand how to Transmit data over network.

CO 4) Student will understand which is the best protocol for the Transmission of data which cause less failure on network.

CO 5) Student will understand how to recover from the failure if any occurs on network.

Formative and summative Evaluation

- 1) Formative Evaluation: Knowledge, Understanding, Application, Skill**
- 2) Summative Evaluation: Term End Examination and University Examination**

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Educational Link: 1. www.tutorialspoint.com
2. www.quora.com

References:

- Book 1: Unix Network Programming, Volume 1: The Sockets Networking API, 3/E by W. Richard Stevens, Bill Fenner, Andrew M. Rudoff, PHI**
Book 2: The Definitive Guide to Linux Network Programming by KEIR DAVIS, JOHN W. TURNER, AND NATHAN YOCOM, Apress.



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CS-301

Course: Software Metrics & Project Management

Name of the Teacher: Dr Bhatambrekar Shubhangi

Class: M.Sc.II (Computer Science) Pattern: 2013 (Semester III)

Course Outcomes: Software metrics & Project Management

CO1) Students will understand Software Engineering and basic testing Concepts.

CO2) Students will know skills that are required to ensure successful medium and large scale software projects.

CO3) Student learn to select and apply project management techniques for process modeling, planning, estimation, risk management.

CO 4) Student will learn software verification.

CO 5) understanding design and execution of system test cases.

Formative and summative Evaluation

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 2 <https://www.w3school.com>



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**CS-302
Course: Mobile Computing**

**Name of the Teacher: Aishwarya Nayak
Class: M.Sc.II (Computer Science) Pattern: 2013 (Semester III)**

Course Outcomes: Mobile Computing

- CO1. Explain the basic concepts of wireless network and wireless generations.
- CO2. Demonstrate the different wireless technologies such as CDMA, GSM, GPRS ,etc.
- CO3. Describe and judge the emerging wireless technologies standards such as WLAN, WMAN.
- CO4. Explain the design considerations for deploying the wireless network infrastructure.
- CO5. Differentiate and support the security measures, standards.

Formative and summative Evaluation

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**CS-303
Course: Soft Computing**

**Name of the Teacher: Kalyani Patil
Class: M.Sc.II (Computer Science)
Pattern: 2013 (Semester III)**

- **ABOUT THE COURSE**

Soft computing is an emerging approach to computing which parallel the remarkable ability of the human mind to reason and learn in an environment of uncertainty and imprecision. Soft computing is based on some biological inspired methodologies such as genetics, evolution, ant's behaviors, particles swarming, human nervous systems, etc.

- **COURSE OUTCOME**

On completion of the course students will be able to

1. Analyze and integrate various soft computing techniques in order to solve problems effectively and efficiently.
2. Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems.
3. Apply neural networks to pattern classification and regression problems.
4. Apply genetic algorithms to combinatorial optimization problems.
5. Apply these techniques in applications which involve perception, reasoning and learning.
6. Students will understand the fundamental theory and concepts of neural networks, neuro modeling, several neural network paradigms and its applications.
7. Formative and summative Evaluation
8. Formative Evaluation: Knowledge, Understanding, Application, Skill

Summative Evaluation: Term End Examination and University Examination

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2 <https://www.w3school.com>



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Course: Business Intelligence

Name of The Teacher: Mrs. Dipali P. Meher

Class: MSc(Computer Science) Pattern: 2013(Semester)

Course Outcomes: COs:

CO1) Students will understand the concepts of data warehouse and data mining and use data preprocessing techniques to build data warehouse

CO2) Students will analyze transaction databases for association rules and use classification methods and prediction techniques on transaction databases.

CO3) Students will understand various clustering techniques for categorizing data and for outlier analysis.

CO4) Students will build basic data warehouse of any organization.

CO5) Students will understand how to implement business intelligence concept in any business.



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**CS-305
Course: Web Services**

**Name of the Teacher: Aishwarya Nayak
Class: M.Sc.II (Computer Science) Pattern: 2013 (Semester III)**

Course Outcomes: Web Services

- CO1. Define Cloud Computing and memorize the different Cloud service and deployment models.
- CO2. Describe importance of virtualization along with their technologies.
- CO3. Use and Examine different cloud computing services.
- CO4. Describe the key components of Amazon Web Service.
- CO5. Design & develop backup strategies for cloud data based on features.

Formative and summative Evaluation

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- 2) **Summative Evaluation: Term End Examination and University Examination**

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 2 <https://www.w3school.com>