

Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderbad, Telangana – 500094)
Autonomous College – Affiliated to Osmania University
Accredited with 'A' Grade by NAAC

M.SC (COMPUTER SCIENCE)

Program Outcomes

PO1 Knowledge: Apply knowledge of computing to produce effective design and solutions for specific problems.

PO2 Problem Solving: Use software development tools, software systems and modern computing platforms.

PO3 Skills: To improve the ability imparting knowledge in various domains and to solve real world problem with modern technological tools

PO4 Adaptability: Adapt to the fast changing world of information technology needs.

PO5 Communication: Communicate effectively on problems, issues and solutions with 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.

PO6 Ethics & Environment: Apply ethical principles and commit to professional ethics and responsibilities and norms in research and the functional areas, understand the issues of environmental context and sustainable development.

PO7 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO8 Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio, economic and technological changes.

Program Specific Outcomes

PSO1 Understand, analyse and develop computer programs in the areas related to algorithms, system software, compiler design.

PSO2 Adaptability in team work environment to develop an application software.

PSO3 Global level research opportunities to pursue Ph.D. programme.

Course Outcomes: Batch (2016-2018 and 2017-19)

Semester I:

| Name of the Course | | Advanced Java Programming |
|---------------------------|--|----------------------------------|
| Course Code | | CS101 |
| CO1 | Develop window based applications using AWT and swing. | |
| CO2 | Develop applications using JDBC and servlets. | |
| CO3 | Develop applications using JSP , JSF and EJB | |
| CO4 | Develop applications using Hibernate | |

| Name of the Course | | Operating Systems |
|---------------------------|---|--------------------------|
| Course Code | | CS102 |
| CO1 | Understand the OS structures and process management issues. | |
| CO2 | Understand different CPU scheduling algorithms and deadlock handling methods. | |
| CO3 | Understand the Types of memory management and storage structures. | |
| CO4 | Understand different file systems, protection and security issues. | |

| Name of the Course | | Software Engineering |
|---------------------------|---|-----------------------------|
| Course Code | | CS103 |
| CO1 | Understand the basics of software, its process and types of process models | |
| CO2 | Interpret about Requirements Engineering, design concepts and Architectural styles of Software Engineering. | |
| CO3 | Analyze about Software Quality and software testing strategies. | |
| CO4 | Interpret about Software Configuration Management process, software Risks and reverse engineering. | |

| Name of the Course | | Discrete Mathematics |
|---------------------------|---|-----------------------------|
| Course Code | | CS104 |
| CO1 | The students would learn the concepts of logics and laws of Boolean Algebra. | |
| CO2 | The students will get acquainted with sets, division algorithm, mathematical induction. | |
| CO3 | Students will be able to appreciate the very fine differences between permutations and combinations. They will be able to solve recurrence relations. | |
| CO4 | Students will be able to understand graph theory which is of great use in computers. | |

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| Name of the Course | Advanced Programming Java Lab |
| Course Code | CS105 |
| CO1 | Develop applications using Swings, JDBC and Servlets |
| CO2 | Develop applications using JSP, JSF and Hibernate |

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| Name of the Course | Operating Systems Lab |
| Course Code | CS106 |
| CO1 | Understand the shell related operations |
| CO2 | Understand the procedure to perform OS functions with the help of C coding. |

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| Name of the Course | Software Engineering Lab |
| Course Code | CS107 |
| CO1 | Attaining the knowledge on CASE tools usage. |
| CO2 | Attaining the knowledge on different real world applications. |

Semester II:

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|---------------------------|--|
| Name of the Course | Programming Using Python |
| Course Code | CS201 |
| CO1 | Develop programs using conditional and looping statements |
| CO2 | Develop programs using functions, files and exceptions |
| CO3 | Develop programs using lists, tuples, strings, dictionaries and sets |
| CO4 | Develop programs using object oriented concepts and using GUI controls |

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|---------------------------|--|
| Name of the Course | Computer Networks |
| Course Code | CS202 |
| CO1 | To relate the different network operations with the related layers of OSI and TCP Protocol and analyze the responsibilities of Physical Layer. |
| CO2 | To analyze different Data Link Layer operations and access how the Multiple Access sub layer protocols . |
| CO3 | To identify the nomenclature used in IP Addresses and analyze the IP Header Format, different Routing Algorithms and Congestion Control Techniques used in the Internet. |
| CO4 | To analyze how Transport Layer exactly implements a reliable end to end delivery of messages and analyse TCP Header format and also how Transport Layer overcomes Congestion control at its level. To analyse the different services provided by Application Layer |

| Name of the Course | | Design and Analysis of Algorithms |
|---------------------------|---|--|
| Course Code | | CS203 |
| CO1 | Fundamentals of Algorithms and sorting and searching techniques. | |
| CO2 | Familiar with Divide-and-Conquer algorithms. | |
| CO3 | Familiar with Dynamic programming and Greedy Method algorithms | |
| CO4 | Familiar with Backtracking and Branch and Bound related algorithms. | |

| Name of the Course | | Automata Languages and Computations |
|---------------------------|--|--|
| Course Code | | CS204 |
| CO1 | Familiar with Fundamentals of Finite automata | |
| CO2 | Understand the regular expressions and conversions | |
| CO3 | Acquire the knowledge of CFG and Pushdown automata | |
| CO4 | Designing Turing Machines | |

| Name of the Course | | Programming Using Python Lab |
|---------------------------|---|-------------------------------------|
| Course Code | | CS205 |
| CO1 | Develop applications using conditional & looping statement, functions, files and exceptions | |
| CO2 | Develop applications using lists, tuples, dictionaries, sets, object oriented concepts and GUI controls | |

| Name of the Course | | Computer Networks Lab |
|---------------------------|---|------------------------------|
| Course Code | | CS206 |
| CO1 | Understand the programming concepts of UDP, TCP Server and Client communication. | |
| CO2 | Understand the shortest path in networks and message simulation and routing implementation. | |

| Name of the Course | | Design and Analysis of Algorithms Lab |
|---------------------------|---|--|
| Course Code | | CS207 |
| CO1 | Familiarity with different algorithm procedures related to system controls. | |
| CO2 | Understand the modern algorithm pseudo code implementation procedures. | |

Semester III:

| Name of the Course | | C# Programming |
|---------------------------|---|-----------------------|
| Course Code | | CS301 |
| CO1 | Develop applications using classes and objects, console applications. | |
| CO2 | Develop programs using console applications and exception handlings. | |
| CO3 | Develop programs using text file handling and Windows applications. | |
| CO4 | Develop programs using ASP.NET and ADO.NET with web controls. | |

| Name of the Course | | Computer Organization |
|---------------------------|---|------------------------------|
| Course Code | | CS302 |
| CO1 | Understand Basic structure of digital computer and its functions. | |
| CO2 | Understand digital components and micro operations | |
| CO3 | Understand Micro programming operations and CPU organization. | |
| CO4 | Understand Memory organization and I/O device processing. | |

| Name of the Course | | Network Security |
|---------------------------|--|-------------------------|
| Course Code | | CS303(A) |
| CO1 | Understand the basic security issues and classical encryption techniques. | |
| CO2 | Understand the Public Key Cryptosystems and how the keys are exchanged among different participating entities. | |
| CO3 | Understand the Message Authentication algorithms and importance of Digital Signatures. | |
| CO4 | Understand various Hash Functions used in security and also about Email and IP Security. | |

| Name of the Course | | Object Oriented System Development |
|---------------------------|--|---|
| Course Code | | CS304(A) |
| CO1 | Be familiar with major concepts related to Object Oriented Systems Development life cycle and building blocks of UML | |
| CO2 | Acquire knowledge on structural modeling diagrams, common mechanisms and packages in UML | |
| CO3 | Acquire knowledge on behavioural modeling diagrams, processes and threads in UML | |
| CO4 | Be familiar with component diagrams and deployment diagrams in UML | |

| Name of the Course | | C# Programming Lab |
|---------------------------|---|---------------------------|
| Course Code | | CS305P |
| CO1 | Understand the development of windows and web based applications with properties setting. | |
| CO2 | Understand to connect applications with different backends and with real time applications. | |

| Name of the Course | | Computer Organization Lab |
|---------------------------|--|----------------------------------|
| Course Code | | CS306P |
| CO1 | Analyze the behaviour of logic gates and Design combinational circuits for basic components of computer system and applications. | |
| CO2 | Write assembly level programs on 8086 arithmetic operations using various addressing modes and Design assembly language programs on 8051 microcontroller | |

| Name of the Course | | System Security Lab |
|---------------------------|---|----------------------------|
| Course Code | | CS307(A)P |
| CO1 | Familiarize with different keys implementation. | |
| CO2 | Understand to write encryption and decryption algorithms in a language. | |

Semester IV:

| Name of the Course | | Compiler Design |
|---------------------------|---|------------------------|
| Course Code | | CS401 |
| CO1 | Acquire knowledge on The major concept areas of language translation and compiler design | |
| CO2 | Acquire knowledge on Various phases of compiler and its use, code optimization techniques | |
| CO3 | Acquire knowledge on Machine code generation and use of symbol table | |
| CO4 | Acquire knowledge on Parser by parsing LL parser and LR parser | |

| Name of the Course | | Cloud Computing |
|---------------------------|---|------------------------|
| Course Code | | CS402 |
| CO1 | Be familiar with major concepts related to traditional computing and cloud computing. | |
| CO2 | Understand virtualization and different types of clouds. | |
| CO3 | Be familiar with workflow engine process and performance predictions. | |
| CO4 | Acquire knowledge on Security, privacy and legal issues related to cloud environment. | |

| Name of the Course | | Mobile Computing |
|---------------------------|---|-------------------------|
| Course Code | | CS403(A) |
| CO1 | Mobile communication medias, Protocols. | |
| CO2 | Students will be able to understand Wireless LAN and Mobile Network layer | |
| CO3 | WAP usage for mobile environment and different architectures for mobile communication | |
| CO4 | Students will be able acquire knowledge on WML and WAP 2.0 environment | |

| Name of the Course | | Robotics and Artificial Intelligence |
|---------------------------|---|---|
| Course Code | | SECS 404(A) |
| CO1 | Acquire knowledge on Intelligent agents , uninformed search algorithms and informed search algorithms . | |
| CO2 | Acquire basic knowledge on machine learning, Neural Networks and Robotics. | |

Course Outcomes: Batch(2018-20)

Semester I:

| Name of the Course | | Advanced Java Programming |
|---------------------------|--|----------------------------------|
| Course Code | | CS101 |
| CO1 | Develop window based applications using AWT and swing. | |
| CO2 | Develop applications using JDBC and servlets. | |
| CO3 | Develop applications using JSP , JSF and EJB | |
| CO4 | Develop applications using Hibernate | |

| Name of the Course | | Operating Systems |
|---------------------------|---|--------------------------|
| Course Code | | CS102 |
| CO1 | Understand the OS structures and process management issues. | |
| CO2 | Understand different CPU scheduling algorithms and deadlock handling methods. | |
| CO3 | Understand the Types of memory management and storage structures. | |
| CO4 | Understand different file systems, protection and security issues. | |

| Name of the Course | | Software Engineering |
|---------------------------|---|-----------------------------|
| Course Code | | CS103 |
| CO1 | Understand the basics of software, its process and types of process models | |
| CO2 | Interpret about Requirements Engineering, design concepts and Architectural styles of Software Engineering. | |

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| C03 | Analyze about Software Quality and software testing strategies. |
| C04 | Interpretation of Software Configuration Management process, software Risks and reverse engineering. |

| Name of the Course | | Discrete Mathematics |
|---------------------------|---|-----------------------------|
| Course Code | | CS104 |
| C01 | The students would learn the concepts of logics and laws of Boolean Algebra. | |
| C02 | The students will get acquainted with sets, division algorithm, mathematical induction. | |
| C03 | Students will be able to appreciate the very fine differences between permutations and combinations. They will be able to solve recurrence relations. | |
| C04 | Students will be able to understand graph theory which is of great use in computers. | |

| Name of the Course | | Advanced Programming Java Lab |
|---------------------------|--|--------------------------------------|
| Course Code | | CS105 |
| C01 | Develop applications using Swings, JDBC and Servlets | |
| C02 | Develop applications using JSP, JSF and Hibernate | |

| Name of the Course | | Operating Systems Lab |
|---------------------------|---|------------------------------|
| Course Code | | CS106 |
| C01 | Understand the shell related operations | |
| C02 | Understand the procedure to perform OS functions with the help of C coding. | |

| Name of the Course | | Software Engineering Lab |
|---------------------------|---|---------------------------------|
| Course Code | | CS107 |
| C01 | Attaining the knowledge on CASE tools usage. | |
| C02 | Attaining the knowledge on different real world applications. | |

Semester II:

| Name of the Course | | Programming Using Python |
|---------------------------|--|---------------------------------|
| Course Code | | CS201 |
| C01 | Develop programs using conditional and looping statements | |
| C02 | Develop programs using functions, files and exceptions | |
| C03 | Develop programs using lists, tuples, strings, dictionaries and sets | |
| C04 | Develop programs using object oriented concepts and using GUI controls | |

| Name of the Course | | Computer Networks |
|---------------------------|--|--------------------------|
| Course Code | | CS202 |
| CO1 | Understand the basic security issues and classical encryption techniques. | |
| CO2 | Understand the Public Key Cryptosystems and how the keys are exchanged among different participating entities. | |
| CO3 | Understand the Message Authentication algorithms and importance of Digital Signatures. | |
| CO4 | Understand various Hash Functions used in security and also about Email and IP Security. | |

| Name of the Course | | Design and Analysis of Algorithms |
|---------------------------|---|--|
| Course Code | | CS203 |
| CO1 | Fundamentals of Algorithms and sorting and searching techniques. | |
| CO2 | Familiar with Divide-and-Conquer algorithms. | |
| CO3 | Familiar with Dynamic programming and Greedy Method algorithms | |
| CO4 | Familiar with Backtracking and Branch and Bound related algorithms. | |

| Name of the Course | | Automata Languages and Computations |
|---------------------------|--|--|
| Course Code | | CS204 |
| CO1 | Familiar with Fundamentals of Finite automata | |
| CO2 | Understand the regular expressions and conversions | |
| CO3 | Acquire the knowledge of CFG and Pushdown automata | |
| CO4 | Designing Turing Machines | |

| Name of the Course | | Programming Using Python Lab |
|---------------------------|---|-------------------------------------|
| Course Code | | CS205 |
| CO1 | Develop applications using conditional & looping statement, functions, files and exceptions | |
| CO2 | Develop applications using lists, tuples, dictionaries, sets, object oriented concepts and GUI controls | |

| Name of the Course | | Computer Networks Lab |
|---------------------------|---|------------------------------|
| Course Code | | CS206 |
| CO1 | Understand the programming concepts of UDP, TCP Server and Client communication. | |
| CO2 | Understand the shortest path in networks and message simulation and routing implementation. | |

| Name of the Course | | Design and Analysis of Algorithms Lab |
|---------------------------|---|--|
| Course Code | | CS207 |
| CO1 | Familiarity with different algorithm procedures related to system controls. | |
| CO2 | Understand the modern algorithm pseudo code implementation procedures. | |

Semester III:

| Name of the Course | | C# Programming |
|---------------------------|---|-----------------------|
| Course Code | | CS301 |
| CO1 | Develop applications using classes and objects, console applications. | |
| CO2 | Develop programs using console applications and exception handlings. | |
| CO3 | Develop programs using text file handling and Windows applications. | |
| CO4 | Develop programs using ASP.NET and ADO.NET with web controls. | |

| Name of the Course | | Computer Organization |
|---------------------------|---|------------------------------|
| Course Code | | CS302 |
| CO1 | Understand Basic structure of digital computer and its functions. | |
| CO2 | Understand digital components and micro operations | |
| CO3 | Understand Micro programming operations and CPU organization. | |
| CO4 | Understand Memory organization and I/O device processing. | |

| Name of the Course | | Big Data Analytics |
|---------------------------|--|---------------------------|
| Course Code | | CS303(B) |
| CO1 | Be familiar with Big Data Concepts | |
| CO2 | Be familiar with Big Data Analytics | |
| CO3 | Be familiar with MapReduce fundamentals | |
| CO4 | Acquire knowledge on the usage of Big Data Analytics in social media | |

| Name of the Course | | Data Mining |
|---------------------------|---|--------------------|
| Course Code | | CS304(B) |
| CO1 | Acquire knowledge on Data warehouse and OLAP operations. | |
| CO2 | Acquire knowledge on Data mining and generating association | |

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| | rules from Frequent Pattern sets using algorithms |
| C03 | Acquire knowledge on classification methods and cluster analysis methods |
| C04 | Acquire knowledge on outlier detection methods and data mining trends. |

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|---------------------------|---|---------------------------|
| Name of the Course | | C# Programming Lab |
| Course Code | | CS305P |
| CO1 | Understand the development of windows and web based applications with properties setting. | |
| CO2 | Understand to connect applications with different backends and with real time applications. | |

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|---------------------------|--|----------------------------------|
| Name of the Course | | Computer Organization Lab |
| Course Code | | CS306P |
| CO1 | Understand to write Microprocessor programming. | |
| CO2 | Understand to write Microcontroller programming. | |

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|---------------------------|--|-------------------------------|
| Name of the Course | | Big Data Analytics Lab |
| Course Code | | CS307(B)P |
| CO1 | Familiar with No SQL and big data analysis with map reduce procedures. | |
| CO2 | Understand how to analyse big data in real world applications. | |

Semester IV:

| | | |
|---------------------------|--|------------------------|
| Name of the Course | | Compiler Design |
| Course Code | | CS401 |
| CO1 | Be familiar with major concepts of language translation and compiler design. | |
| CO2 | Understand various phases of compiler and its use, code optimization techniques. | |
| CO3 | Be familiar with machine code generation and use of symbol table. | |
| CO4 | Acquire knowledge on parser by passing LL parser and LR parser. | |

| Name of the Course | | Cloud Computing |
|---------------------------|---|------------------------|
| Course Code | | CS402 |
| CO1 | Be familiar with major concepts related to traditional computing and cloud computing. | |
| CO2 | Understand virtualization and different types of clouds. | |
| CO3 | Be familiar with workflow engine process and performance predictions. | |
| CO4 | Acquire knowledge on Security, privacy and legal issues related to cloud environment. | |

| Name of the Course | | Mobile Computing |
|---------------------------|---|-------------------------|
| Course Code | | CS403(A) |
| CO1 | Be familiar with mobile environment structure and its types. | |
| CO2 | Understand wireless LAN and mobile network layer. | |
| CO3 | Be familiar with transport layer and different application protocols. | |
| CO4 | Acquire knowledge on WML and WAP 2.0 environment. | |

| Name of the Course | | Robotics and Artificial Intelligence |
|---------------------------|---|---|
| Course Code | | SECS 404(A) |
| CO1 | Acquire knowledge on Intelligent agents, uninformed search algorithms and informed search algorithms. | |
| CO2 | Acquire basic knowledge on machine learning, Neural Networks and Robotics. | |