

**Silver Oak College of Engineering and Technology**  
**Department of Information Technology**  
**Mid Semester 2 Syllabus (Summer-2019)**

8<sup>th</sup> IT

Subject Code	Subject Name	Syllabus( According to GTU)
2180703	ARTIFICIAL INTELLIGENCE	<p><b>Unit 1 What is AI?</b>  : The AI Problems, The Underlying Assumption, What Is An AI Techniques, The Level Of The Model, Criteria For Success, Some General References, One Final Word.</p> <p><b>Unit 2:Problems, State Space Search &amp; Heuristic Search Techniques :</b>  Defining The Problems As A State Space Search, Production Systems, Production Characteristics, Production System Characteristics, And Issues In The Design Of Search Programs, Additional Problems. Generate-And-Test, Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction, Means-Ends Analysis.</p> <p><b>Unit 3:Knowledge Representation Issues :</b>  Representations And Mappings, Approaches To Knowledge Representation</p> <p><b>Unit 4:Using Predicate Logic :</b>  Representation Simple Facts In Logic, Representing Instance And Isa Relationships, Computable Functions And Predicates, Resolution.</p> <p><b>Unit 5:Representing Knowledge Using Rules :</b>  Procedural Versus Declarative Knowledge, Logic Programming, Forward Versus Backward Reasoning.</p> <p><b>Unit 6:Symbolic Reasoning Under Uncertainty :</b>  Introduction To Nonmonotonic Reasoning, Logics For Non-monotonic Reasoning.</p> <p><b>Unit 7 Statistical Reasoning :</b>  Probability And Bays' Theorem, Certainty Factors And Rule-Base Systems, Bayesian Networks, Dempster Shafer Theory, Fuzzy Logic</p> <p><b>Unit 8: Weak Slot-and-Filler Structures :</b>  Semantic Nets, Frames.</p>
2180711	PYTHON PROGRAMMING	<p><b>Unit 1 : Introduction to Python</b></p> <ul style="list-style-type: none"> <li>• The basic elements of python</li> <li>• Branching Programs</li> <li>• Control Structures</li> <li>• Strings and Input</li> <li>• Iteration</li> </ul> <p><b>Unit 2: Functions, Scoping and Abstraction</b></p> <ul style="list-style-type: none"> <li>• Functions and scoping</li> <li>• Specifications</li> <li>• Recursion</li> <li>• Global variables</li> <li>• Modules</li> <li>• Files</li> <li>• System Functions and Parameters</li> </ul> <p><b>Unit 3: Structured Types, Mutability and Higher-Order</b></p>

		<p><b>Functions</b></p> <ul style="list-style-type: none"><li>• Strings, Tuples, Lists and Dictionaries</li><li>• Lists and Mutability</li><li>• Functions as Objects</li></ul> <p><b>Unit 4: Testing, Debugging, Exceptions and Assertions</b></p> <ul style="list-style-type: none"><li>• Types of testing – Black-box and Glass-box</li><li>• Debugging</li><li>• Handling Exceptions</li><li>• Assertions</li></ul> <p><b>Unit 5: Classes and Object- Oriented Programming</b></p> <ul style="list-style-type: none"><li>• Abstract Data Types and Classes</li><li>• Inheritance</li><li>• Encapsulation and Information Hiding</li></ul> <p><b>Unit 6: Simple Algorithms and Data Structures</b></p> <ul style="list-style-type: none"><li>• Search Algorithms</li><li>• Sorting Algorithms</li><li>• Hash Tables</li></ul>

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6<sup>th</sup> IT

Subject Code	Subject Name	Syllabus( According to GTU)
2160711	.NET TECHNOLOGY	<p><b>Unit:3 C#.NET</b>            Language Features and Creating .NET Projects, Namespaces Classes and Inheritance -, Namespaces Classes and Inheritance -, C, Exploring the Base Class Library -, Debugging and Error Handling -, Data Types -, Exploring Assemblies and Namespaces, String Manipulation ,Files and I/O ,Collections</p> <p><b>Unit:4 ADO.NET</b>            Benefits of ADO.NET, ADO.NET compared to classic ADO -, Datasets, Managed Providers -, Data Binding: Introducing Data Source Controls -, Reading and Write Data Using the SqlDataReader Control</p> <p><b>Unit:10 Managing State</b>            Preserving State in Web Applications and Page-Level State, Using Cookies to Preserve State, ASP.NET Session State ,Storing Objects in Session State, Configuring Session State, Setting Up an Out-of-Process State Server, Storing Session State in SQL Server, Using Cookieless Session IDs, Application State Using the DataList and Repeater Controls, Overview of List-Bound Controls, Creating a Repeater Control and DataList Control</p> <p><b>Unit:11 Creating and Consuming Web Services</b>            The Motivation for XML Web Services, Creating an XML Web Service with Visual Studio, Designing XML Web Services, Creating Web Service Consumers, Discovering Web Services Using UDDI</p>
2160701	SOFTWARE ENGINEERING	<p><b>Unit:5 Software Design</b>            User Interface Design, Web Application Design.</p> <p><b>Unit:3 Managing Software Project</b>            Software Metrics (Process, Product and Project Metrics), Software Project Estimations, Software Project Planning (MS Project Tool), Project Scheduling &amp; Tracking, Risk Analysis &amp; Management (Risk Identification, Risk Projection, Risk Refinement , Risk Mitigation).</p> <p><b>Unit:6 Software Coding &amp; Testing</b>            Coding Standard and coding Guidelines, Code Review, Software Documentation, Testing Strategies, Testing Techniques and Test Case, Test Suites Design, Testing Conventional Applications, Testing Object Oriented Applications, Testing Web and Mobile Applications, Testing Tools (Winrunner, Load runner).</p> <p><b>Unit:7 Quality Assurance and Management</b>            Quality Concepts and Software Quality Assurance, Software Reviews (Formal Technical Reviews), Software Reliability, The Quality Standards: ISO 9000, CMM, Six Sigma for SE, SQA Plan.</p> <p><b>Unit:8 Software Maintenance and Configuration Management</b>            Types of Software Maintenance, Re-Engineering, Reverse Engineering,</p>

		Forward Engineering, The SCM Process, Identification of Objects in the Software Configuration, Version Control and Change Control.
2160707	ADVANCE JAVA	<p><b>Unit 3:Servlet API and Overview</b> Servlet Model: Overview of Servlet, Servlet Life Cycle, HTTP Methods Structure and Deployment descriptor ServletContext and ServletConfig interface, Attributes in Servlet, Requestdispatcher interface The Filter API: Filter, FilterChain, Filter Config Cookies and Session Management: Understanding state and session, Understanding Session Timeout and Session Tracking, URL Rewriting</p> <p><b>Unit 4: Java Server Pages</b> JSP Form Processing, JSP Session and Cookies Handling, JSP Session Tracking JSP Database Access, JSP Standard Tag Libraries, JSP Custom Tag, JSP Expression Language, JSP Exception Handling, JSP XML Processing</p> <p><b>Unit 5: Java Server Faces 2.0</b> Introduction to JSF, JSF request processing Life cycle, JSF Expression Language, JSF Standard Component, JSF Facelets Tag, JSF Converter Tag, JSF Validation Tag, JSF Event Handling and Database Access, JSF Libraries: PrimeFaces</p> <p><b>Unit 6: Hibernate 4.0</b> Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate O/R Mapping, Hibernate Annotation, Hibernate Query Language</p> <p><b>Unit 7: Java Web Frameworks: Spring MVC</b> Overview of Spring, Spring Architecture</p>
2161603	DATA COMPRESSION AND DATA RETRIVAL	<p><b>Unit:4 Arithmetic Coding</b> Introduction ,Coding a Sequence, Generating a Tag, Deciphering the Tag, Generating a Binary Code ,Uniqueness and Efficiency of the Arithmetic Code, Algorithm Implementation, Integer Implementation, Comparison of Huffman and Arithmetic Coding ,Adaptive Arithmetic Coding</p> <p><b>Unit: 5 Dictionary Techniques</b> Static Dictionary, Digram Coding, Adaptive Dictionary, The LZ77 Approach, The LZ78 Approach, Applications- File Compression —UNIX compress, Image Compression—The Graphics Interchange Format (GIF) Image Compression—Portable Network Graphics (PNG) ,Compression over Modems —V.42 bis</p> <p><b>Unit:6 Predictive Coding</b> Prediction with Partial match (ppm): The basic algorithm, The ESCAPE SYMBOL, Length of context, The Exclusion Principle, The Burrows -Wheeler Transform: Move -to -front coding Lossless Image Compression CALIC, JPEG-LS, Multi-resolution Approaches Facsimile Encoding Dynamic Markov Compression.</p> <p><b>Unit:10 XML retrieval</b> Basic XML concepts, Challenges in XML retrieval, A vector space model for XML retrieval, Evaluation of XML retrieval, Text-centric vs. data-centric XML retrieval.</p>
2160708	WEB TECHNOLOGY	<b>Unit 4: Style sheets</b>

		<p>Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS, CSS2, Overview and features of CSS3.</p> <p><b>Unit 5 JavaScript</b> Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: Javascript and objects, JavaScript own objects, the DOM and web browser environments, Manipulation using DOM, forms and validations, DHTML : Combining HTML, CSS and Javascript, Events and buttons.</p> <p><b>Unit 6 XML</b> Introduction to XML, uses of XML.</p> <p><b>Unit 7 PHP</b> Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions, Object Oriented Programming with PHP.</p> <p><b>Unit 8 PHP and MySQL</b> Basic commands with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names, creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHPmyadmin and database bugs.</p>
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**Silver Oak College of Engineering and Technology**  
**Department of Information Technology**  
**Mid Semester 1 Syllabus (Summer 2019)**

4<sup>th</sup> IT

Subject Code	Subject Name	Syllabus( According to GTU)
2140702	<b>OPERATING SYSTEM</b>	<p><b>Unit 3:Interprocess Communication</b>            Race Conditions, Critical Section, Mutual Exclusion, Hardware Solution, Strict Alternation , Peterson’s Solution, The Producer Consumer Problem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader’s &amp; Writer Problem, Dining Philosopher Problem etc., Scheduling , Scheduling Algorithms.</p> <p><b>Unit 4: Deadlocks</b>            Definition,Deadlock characteristics , Deadlock Prevention , Deadlock Avoidance :banker’s algorithm, Deadlock detection and Recovery</p> <p><b>Unit 6: Memory Management</b>  <b>Basic Memory Management:</b> Definition ,Logical and Physical address map , Memory allocation : Contiguous Memory allocation – Fixed and variable partition – Internal and External fragmentation and Compaction ,Paging : Principle of operation – Page allocation – Hardware support for paging –,Protection and sharing – Disadvantages of paging.</p> <p><b>Virtual Memory:</b> Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault , Working Set , Dirty page/Dirty bit – Demand paging ( Concepts only) – Page Replacement policies : Optimal (OPT) , First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU)</p> <p><b>Unit 7:File Management</b>            File concept, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous,linked, indexed), Free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table),efficiency &amp; performance.</p>
2140705	<b>OBJECT ORIENTED PROGRAMMING WITH C++</b>	<p><b>Unit 5 Inheritance :</b>            Concept of Inheritance, types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class</p> <p><b>Unit 6 Polymorphism :</b>            Pointers in C++, Pointes and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism</p> <p><b>Unit 7 I/O and File Management :</b>            Concept of streams, cin and cout objects, C++ stream classes, Unformatted and formatted I/O, manipulators, File stream, C++ File stream classes, File management functions, File modes, Binary and random Files</p> <p><b>Unit 8 Templates, Exceptions and STL :</b></p>

		<p>What is template? function templates and class templates, Introduction to exception, try-catch-throw, multiple catch, catch all, rethrowing exception, implementing user defined exceptions, Overview and use of Standard Template Library</p>
2140706	<p><b>NUMERICAL &amp; STATISTICAL METHODS FOR COMPUTER ENGINEERING</b></p>	<p><b>Unit 4:</b> Curve Fitting Mathematical background, Least squares linear and polynomial regression.</p> <p><b>Unit 5:</b> Numerical Integration: Newton-Cotes integration formulas; trapezoidal rule and Simpson Rule.</p> <p><b>Unit 6:</b> Ordinary differential equations: Euler's method, Runge-Kutta methods, etc.</p> <p><b>Unit 7:</b> Statistical Methods Mean, median, mode, standard deviation, variance, correlation coefficient.</p>
2140707	<p><b>COMPUTER ORGANIZATION</b></p>	<p><b>Unit 5 : Central Processing Unit :</b> Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC)</p> <p><b>Unit 6: Pipeline and Vector Processing:</b> Flynn's taxonomy, Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline, Vector Processing, Array Processors</p> <p><b>Unit 7: Computer Arithmetic:</b> Introduction, Addition and subtraction, Multiplication Algorithms (Booth Multiplication Algorithm), Division Algorithms, Floating Point Arithmetic operations, Decimal Arithmetic Unit.</p> <p><b>Unit 8: Input Output Organization:</b> Input- Output Interface, Asynchronous Data Transfer, Modes Of Transfer, Priority Interrupt, DMA, Input - Output Processor (IOP), CPU IOP Communication, Serial communication.</p>
2140709	<p><b>COMPUTER NETWORK</b></p>	<p><b>UNIT 2: Application Layer</b> Electronic Mail, Domain Name Server, Socket programming with TCP and UDP.</p> <p><b>UNIT 3: Transport Layer</b> Principles of reliable data transfer, Connection oriented transport (TCP), Congestion control.</p> <p><b>UNIT 4: Network Layer</b> Introduction Network Layer, Virtual and Datagram networks, Study of Router, IP protocol in the Internet, IP addressing in the Internet, Routing Algorithms.</p> <p><b>UNIT 5: The Link Layer and Local Area Networks</b> Introduction and link layer services, Error-detection and correction techniques (CRC and Hamming Code only).</p>