

E.G.S.PILLAYENGINEERINGCOLLEGE

(Autonomous)

Approved by AICTE, New Delhi | Affiliated to
Anna University, Chennai Accredited by NAAC with
„A“ Grade | Accredited by NBA (CSE, EEE, MECH, ECE,
CIVIL, IT)

NAGAPATTINAM–611002



B.E. Computer Science Engineering Full Time Curriculum and Syllabus

SEMESTER VI									
Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CA	ES	Total	
Theory Course									
1701MGX01	Professional Ethics	3	0	0	3	40	60	100	HSS
1702CS601	Web Technology	3	2	0	4	40	60	100	PC
1702CS602	Artificial Intelligence	3	0	0	3	40	60	100	PC
1702CS603	Distributed Systems	3	0	0	3	40	60	100	PC
1703CS012/1703MG008	Data Warehousing and Data Mining/Human Rights (Elective III)	3	0	0	3	40	60	100	PE
1703CE032/1703EC020/1703ME011	Global Warming and Climate Change/Soft Computing/Industrial Robotics Elective IV(Open)	3	0	0	3	40	60	100	OE
Laboratory Course									
1702CS651	Web Technology Laboratory	0	0	2	1	50	50	100	PC
1704CS652	Mobile Application Development Laboratory (Mini Project II)	0	0	2	1	50	50	100	EEC
1704CS653	Industrial Visit Presentation	0	0	0	1	100	-	100	EEC
1704GE651	Life Skills: Aptitude-II	0	0	2	1	100	-	100	EEC
Total		18	2	6	23	540	460	1000	

L – Lecture | T – Tutorial | P – Practical | CA – Continuous Assessment | ES – End Semester

1701MGX01	PROFESSIONAL ETHICS				L	T	P	C
					3	0	0	3
PREREQUISITE :		Basic Understanding of Human Values, Ethical thinking						
COURSE OBJECTIVES:								
<ol style="list-style-type: none"> To understand Human values, ethical theory, codes of ethics, work place responsibilities and rights. To understand engineering experimentation, global issues and contemporary ethical issues To understand personal ethics, legal ethics, cultural associated ethics and engineer's responsibility. 								
UNIT I	HUMAN VALUES							9 Hours
Morals and Ethics - Honesty - Integrity - Values - Work Ethic - Civic Virtue - Respect for Others - Living Peacefully - Caring and Sharing - Self-Confidence - Courage - Co-operation - Commitment - Empathy.								
UNIT II	ENGINEERING ETHICS AND PROFESSIONALISM							9 Hours
Scope of 'Engineering Ethics'- Variety of moral issues - Types of inquiry - Accepting and sharing responsibility - Ethical dilemmas - Moral autonomy - Kohlberg's and Gilligan's theory - Consensus and controversy - Profession and Professionalism - Models of Professional Roles - Right action theories - Senses of corporate responsibility - Codes of ethics: Importance - justification - limitation - Abuse - Sample codes NSPE - IEEE - Institution of Engineers (India).								
UNIT III	ENGINEERING AS SOCIAL EXPERIMENTATION							9 Hours
Engineering as experimentation - Engineers as responsible experimenters - Balanced outlook on law - Cautious optimism - Safety and risk - Assessing and reducing risk - Safe exits - The Challenger case study - Bhopal Gas Tragedy - The Three Mile Island and Chernobyl.								
UNIT IV	WORKPLACE RESPONSIBILITIES AND RIGHTS							9 Hours
Fundamental Rights - Responsibilities and Duties of Indian Citizens - Teamwork - Ethical corporate climate - Collegiality and loyalty - Managing conflict - Respect for authority - Collective bargaining - Confidentiality - Conflicts of interest - Occupational crime - Professional rights - Employee rights								
UNIT V	GLOBAL ISSUES							9 Hours
Multinational corporations: Technology transfer and appropriate technology - International rights promoting morally just measures - Environmental ethics: Engineering, ecology - economics - Human and sentient centred - and bio and eco centric ethics - Computer ethics and internet - Engineers as managers - Consulting engineers - Engineers as expert witnesses and advisors - Moral leadership.								
							Total:	45 Hours
Further Reading:								
		<ol style="list-style-type: none"> Sample code of ethics like IETE, ASME, ASCE, Indian Institute of Materials Management. Virtues for life 						
COURSE OUTCOMES:								
		After completion of the course, Student will be able to						
CO1	Articulate engineering ethics theory with sustained lifelong learning to strengthen autonomous engineering decisions.							
CO2	Be an example of faith, character and high professional ethics, and cherish the workplace responsibilities, rights of others, public's welfare, health and safety.							
CO3	Contribute to shape a better world by taking responsible and ethical actions to improve the environment and the lives of world community.							
CO4	Fortify the competency with facts and evidences to responsibly confront moral issues raised by technological activities, and serve in responsible positions of leadership.							
CO5	Be Proficient in analytical abilities for moral problem solving in engineering situations through exploration and assessment of ethical problems supported by established experiments.							

References:	
1.	Mike W Martin and Roland Schinzinger, Ethics in Engineering, 4th edition, Tata McGraw Hill Publishing Company Pvt Ltd, New Delhi, 2014.
2.	M Govindarajan, S Natarajan and V S Senthil Kumar, Engineering Ethics, PHI Learning Private Ltd, New Delhi, 2012.
3.	R S Naagarazan, A text book on professional ethics and human values, New age international limited, New Delhi, 2006.
4.	Charles E Harris, Michael S Protchard and Michael J Rabins, Engineering Ethics - Concepts and Cases, Wadsworth Thompson Learning, United States, 2005.
5.	Charles D Fleddermann, Engineering Ethics, Pearson Education/ Prentice Hall of India, New Jersey, 2004.
6.	http://www.slideworld.org/slidestag.aspx/human-values-and- Professional-ethics .

1702CS601	WEB TECHNOLOGY	L	T	P	C
		3	2	0	4
COURSE OBJECTIVES:					
1. To impart the new concepts in Web Technologies					
2. To develop understanding about the different technologies used in the World Wide Web including XML, Perl, Rails and PHP					
Prerequisites: Java programming, Visual Programming, Database management systems.					
UNIT I	INTRODUCTION	9 Hours			
XHTML Evolution of HTML and XHTML- Standard XHTML Document Structure- Basic Text Markup- Images-Hypertext Links-Lists- Tables- Forms- Frames. Cascading Style Sheets Introduction to CSS – Levels of Style Sheets- Style Specification Formats- Selector Forms- Property Value Forms – Font Properties- List Properties – Color- Alignment of Text – Background Images- Span and Div Tags.					
UNIT II	XML	9 Hours			
Introduction to SGML – features of XML - XML as a subset of SGML – XML Vs HTML – Views of an XML document - Syntax of XML- XML Document Structure – Namespaces- XML Schemas- simple XML documents – Different forms of markup that can occur in XML documents - Document Type declarations – Creating XML DTDs – Displaying XML Data in HTML browser – Converting XML to HTML with XSL minimalist XSL style sheets – XML applications					
UNIT III	PERL	9Hours			
Origin and Use of Perl- Scalars and their Operations – Assignment Statements and Simple Input and Output – Control Statements- Fundamentals of Arrays – Hashes References- Functions- Pattern Matching – File Input and Output – Simple programs in Perl -Using Perl for CGI Programming.					
UNIT IV	PHP & MySQL	9Hours			
Origin and Use of PHP- Overview of PHP- General Syntactic Characteristics Operations and Expressions- Control Statements- Arrays- Functions-Pattern Matching- Form Handling- Files- Cookies-Session Tracking - Database Connectivity, Simple programs in PHP and MySQL.					
UNIT V	RAILS & AJAX	9 Hours			
RAILS - Overview of Rails- Document Requests- Processing Forms- Rails Application with Databases – Layouts AJAX - Ajax Overview of Ajax – Basics of Ajax – Rails with Ajax.					
Total:					45 Hours
COURSE OUTCOMES:					
After completion of the course, Students will be able to					
CO1	Develop web pages using basic HTML				
CO2	Apply XML techniques in web design				
CO3	Implement CGI using Perl				
CO4	Implement PHP & MySQL database connectivity for real world applications				
CO5	Use AJAX with Rails.				
References:					
1. Deitel & Deitel, Nieto, Lin, Sadhu, XML How to Program, Pearson Education ,New Delhi, 2016					
2. Kogent Learning Solutions Inc, Web Technologies Black Book, Dreamtech Press, New Delhi, 2013					
3. Chris Bates, Web Programming Building Internet Applications 3rd ed., Wiley India Edition, New Delhi, 2012					
4. Phil Ballard, Michael Moncur, Sams Teach Yourself Ajax, JavaScript and PHP, Pearson Education ,New Delhi, 2012					
5. Achyut S Godbole , Atul Kahate, Web Technologies TCP/IP Architecture and Java Programming, 2nd ed., Tata McGraw Hill Education Private Limited, New Delhi, 2015					
6. Pankaj Sharma, Introduction to Web Technology, Katson Books, New Delhi, 2014					
7. Bankim Patel, Lal Bihari Barik, Introduction to Web Technology & Internet, Acme Learning Private Limited, New Delhi, 2015					

1702CS602	ARTIFICIAL INTELLIGENCE	L	T	P	C
		3	0	0	3
PREREQUISITE	Data Structures				
COURSE OBJECTIVES:					
	1. To learn problem solving methodologies using Artificial Intelligence				
	2. To introduce the concepts of machine learning and its implementation				
	3. To introduce AI programming languages like Prolog				
UNIT I	INTRODUCTION	9 Hours			
Introduction to AI-Problem formulation, Problem Definition, Problem solving methods - Problem graphs, Matching, Indexing and Heuristic functions –Hill Climbing-Depth first and Breath first, Constraints satisfaction - Related algorithms, Measure of performance and analysis of search algorithms-Game Playing					
UNIT II	REPRESENTATION OF KNOWLEDGE	9 Hours			
Knowledge representation, Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic-Structured representation of knowledge.					
UNIT III	KNOWLEDGE INFERENCE	9 Hours			
Knowledge representation -Production based system, Frame based system. Inference – Backward chaining, Forward chaining, Rule value approach, Fuzzy reasoning - Certainty factors, Bayesian Theory-Bayesian Network-Dempster - Shafer theory					
UNIT IV	PLANNING AND MACHINE LEARNING	9 Hours			
Basic plan generation systems - Strips - Planning with state-space search – partial-order planning – planning graphs – Learning from observation - Inductive learning – Decision trees – Explanation based learning – Statistical Learning methods - Reinforcement Learning					
UNIT V	AI PROGRAMMING LANGUAGES	9 Hours			
Introduction to Prolog: Introduction To Prolog: Syntax and Numeric Function, Basic List Manipulation Functions In Prolog, Functions, Predicates and Conditional, Input, Output and Local Variables, Iteration and Recursion, Property Lists and Arrays, Miscellaneous Topics, LISP and Other AI Programming Languages.					
				Total:	45 Hours
Further Reading:					
	Bot Applications, Deep Learning				
COURSE OUTCOMES:					
	After completion of the course, Student will be able to				
CO1	Experiment with problems those are amenable to solution by AI methods				
CO2	Choose appropriate AI methods to solve a given problem				
CO3	Formalize the AI problem using proper framework/language				
CO4	Implement machine learning algorithms to solve AI problems				
CO5	Implement the AI methodologies using AI programming Languages				
References:					
1. “Artificial Intelligence” -By Elaine Rich And Kevin Knight (2nd Edition) Tata Mcgraw-Hill					
2. Artificial Intelligence: A Modern Approach, Stuart Russel, Peter Norvig, PHI					
3. Introduction to Prolog Programming By Carl Townsend.					
4. “PROLOG Programming For Artificial Intelligence” -By Ivan Bratko(Addison-Wesley)					
5. https://nptel.ac.in/courses/106/102/106102220/					

1702CS603	DISTRIBUTED SYSTEMS	L	T	P	C
		3	0	0	3
PREREQUISITE :					
1. Operating Systems					
2. Computer Networks					
COURSE OBJECTIVES:					
1. To know the various distributed computing system strategies.					
2. To understand the levels of message passing and call semantics.					
3. To learn the architecture of Remote Procedure Call.					
4. To be aware of the transaction models and deadlocks.					
5. To understand the purpose and categories of clock synchronization.					
UNIT I	BASIC CONCEPTS	9 Hours			
Characterization of Distributed Systems – Examples – Resource Sharing and the Web – Challenges – System Models– Architectural and Fundamental Models – Networking and Internetworking – Types of Networks – Network Principles- Internet Protocols.					
UNIT II	INTERPROCESS COMMUNICATION AND DISTRIBUTED OBJECTS	9 Hours			
Interprocess Communication – The API for the Internet Protocols – External Data Representation and Marshalling –Client –Server Communication – Group Communication – Case Study – Distributed Objects and Remote Invocation– Communication Between Distributed Objects – Remote Procedure Call – Events and Notifications.					
UNIT III	DISTRIBUTED TRANSACTIONS AND CONCURRENCY CONTROL	9 Hours			
Transactions - Locks - Optimistic Concurrency Control - Timestamp Ordering - Comparison - Flat and Nested Distributed Transactions - Atomic Commit Protocols - Concurrency Control in Distributed Transactions – Distributed Deadlocks - Transaction Recovery.					
UNIT IV	RESOURCE MANAGEMENT	9 Hours			
Time and Global States-Introduction-Clocks, Events and Process states-Synchronizing physical clocks- Logical time and logical clocks-Global states-Distributed debugging-Coordination and Agreement-Introduction-Distributed mutual exclusion-Elections Algorithm- Multicast communication-Consensus and related problems.					
UNIT V	DISTRIBUTED FILE SYSTEM AND NAME SERVICES	9 Hours			
Distributed File Systems-Introduction-File service architecture-Network File System- Name Services – introduction -Name Services and the Domain Name System-Directory Services.					
				TOTAL:	45 HOURS
FURTHER READING / CONTENT BEYOND SYLLABUS / SEMINAR :					
1.Google system Architecture					
2.Amazon System Architecture					
COURSE OUTCOMES:					
After completion of the course, Student will be able to					
CO1	Acquire knowledge in the basic concepts of distributed system.				
CO2	Explain interprocess communication and distributed objects.				
CO3	Exemplify the distributed transactions and concurrency control.				
CO4	Explain resource management in distributed systems.				
CO5	Explain distributed file system and name services.				

REFERENCES:
1. Andrew S. Tanenbaum, Maarten van Steen, Distributed Systems, Principles and Paradigms, Pearson Education, 2014.
2. Mugesh Singhal, Niranjana G Shivaratri, Advanced Concepts in Operating Systems, Tata McGraw Hill Edition, 2011.
3. M. L. Liu, Distributed Computing Principles and Applications, Pearson Education, 2011.
4. George Coulouris, Jean Dollimore and Tim Kindberg, Distributed Systems Concepts and Design, Pearson Education, 2010
5. Pradeep K Sinha, "Distributed Operating Systems: Concepts and Design", Prentice Hall of India, 2012
6. https://onlinecourses.nptel.ac.in/noc17_cs42

1702CS651	WEB TECHNOLOGY LABORATORY	L	T	P	C
		0	0	2	1
PREREQUISITE		Computer Networks			
COURSE OBJECTIVES:					
	1. Learn to develop webpages using HTML and CSS				
	2. Be familiar with advanced programming such as PHP/Perl				
	3. Know to use AJAX in implementing Rails				
List of Experiments:					
1. Basic Programs using HTML					
2. Programs using cascading style sheets					
3. Programs to create dynamic web pages					
4. Programs using HTML & XML as data store					
5. Programs using Perl					
6. Programs to demonstrate PHP & MySQL database connectivity					
7. Programs using Perl					
8. Programs using AJAX					
9. Programs using Rails					
10. Case Study : Create a web application for the given problem statement					
				Total:	45 Hours
Additional Experiments:					
	1. Programs for Rails with AJAX				
	2. Programs to implement JSON				
COURSE OUTCOMES:					
	After completion of the course, Student will be able to				
CO1	Develop web pages using basic HTML				
CO2	Apply XML techniques in web design				
CO3	Implement CGI using Perl				
CO4	Implement PHP & MySQL database connectivity for real world applications				
CO5	Use AJAX with Rails.				
References:					
1. Deitel & Deitel, Nieto, Lin, Sadhu, XML How to Program, Pearson Education ,New Delhi, 2011					
2. Kogent Learning Solutions Inc, Web Technologies Black Book, Dreamtech Press, New Delhi, 2009					
3. Chris Bates, Web Programming Building Internet Applications 3rd ed., Wiley India Edition, New Delhi, 2009					
4. Phil Ballard, Michael Moncur, Sams Teach Yourself Ajax, JavaScript and PHP, Pearson Education ,New Delhi, 2009.					
5. Achyut S Godbole , Atul Kahate, Web Technologies TCP/IP Architecture and Java Programming, 2nd ed., Tata McGraw Hill Education Private Limited, New Delhi, 2010					
6. Pankaj Sharma, Introduction to Web Technology, Katson Books, New Delhi, 2008					
7. Bankim Patel, Lal Bihari Barik, Introduction to Web Technology & Internet, Acme Learning Private Limited, New Delhi, 2009					

1704CS652	MOBILE APPLICATION DEVELOPMENT LABORATORY (MINI PROJECT II)			L	T	P	C
				0	0	2	1
PREREQUISITE		Programming Paradigms					
COURSE OBJECTIVES:							
		1. To explore about the structure of mobile development framework					
		2. To analyze the issues of mobile application					
		3. To develop the dynamic application using various parts of android projects					
List of Experiments:							
		1. Develop an interactive application with different layout managers					
		2. Develop Applications with Multiple Activities and a Simple Menu using various View options					
		3. Develop an application for calculator operation					
		4. Develop an application that implements multi thread concepts					
		5. Develop an application using all Google map API functionalities					
		6. Develop an dynamic application that implements database manipulation					
		7. Develop an media oriented application using A/V function					
		8. Develop an application that writes data to the SD card.					
		9. Develop an application that creates an alert upon receiving a message.					
		10. Develop an sensor based application for ballgame sensor					
						Total:	45 Hours
Additional Experiments:							
		1. Develop an application that makes use of RSS Feed.					
		2. Write a mobile application that creates alarm clock.					
COURSE OUTCOMES:							
		After completion of the course, Student will be able to					
CO1	To understand the working of mobile application development						
CO2	To paraphrase the multiple activity options in one application						
CO3	To understand the background data processing about the application						
CO4	To analyze the inter-thread communication between the activities and functions						
CO5	To describe about the sensor implementation in android						
References:							
		1. Android 6 for Programmers: An App-Driven Approach by Paul J. Deitel , Harvey Deitel , Alexander WaldPrentice Hall; 3 edition 2015					
		2. Android Application Development in 24 Hours, by Carmen Delessio , Lauren Darcey , Shane Conder Sams Publishing; 4 edition 2015					
		3. Android Cookbook: Problems and Solutions for Android Developers by Ian Darwin Shroff/O'Reilly; Second edition 2017					
		4. Beginning Android Programming with Android Studio by J. F. DiMarzio Wiley publication Fourth edition 2016					

1704CS653	INDUSTRIAL VISIT PRESENTATION	L	T	P	C
		0	0	0	1
In order to provide the experiential learning to the students, shall take efforts to arrange at least two industrial visit / field visits in a year. A presentation based on Industrial visits shall be made in this semester and suitable credit may be awarded.					
Internal Assessment Only					
Test		40			
Presentation / Quiz / Group Discussion		40			
Report		20			
Grades (Excellent / Good / Satisfactory / Not Satisfactory)					

1704GE651	LIFE SKILLS: APTITUDE II	L	T	P	C
		0	0	2	1
PREREQUISITE :					
Problem Solving techniques					
COURSE OBJECTIVES:					
1.To brush up problem solving skill and to improve intellectual skill of the students 2.To be able to critically evaluate various real life situations by resorting to Analysis Ofkey issues and factors 3.To be able to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions. 4.To enhance analytical ability of students 5.To augment logical and critical thinking of Student					
UNIT I	Partnership, Mixtures and Allegations, Problem on Ages, Simple Interest, Compound Interest				6 Hours
Introduction Partnership - Relation between capitals, Period of investments and Shares- Problems on mixtures - Allegation rule - Problems on Allegation – Problems on ages - Definitions Simple Interest - Problems on interest and amount - Problems when rate of interest and time period are numerically equal - Definition and formula for amount in compound interest - Difference between simple interest and compound interest for 2 years on the same principle and time period.					
UNIT II	Blood relations, , Clocks, Calendars				6 Hours
Defining the various relations among the members of a family - Solving Blood Relation puzzles - Solving the problems on Blood Relations using symbols and notations - Finding the angle when the time is given - Finding the time when the angle is known - Relation between Angle, Minutes and Hours - Exceptional cases in clocks - Definition of a Leap Year - Finding the number of Odd days - Framing the year code for centuries - Finding the day of any random calendar date					
UNIT III	Time and Distance, Time and Work				6 Hours
Relation between speed, distance and time - Converting kmph into m/s and vice versa - Problems on average speed - Problems on relative speed - Problems on trains - Problems on boats and streams - Problems on circular tracks - Problems on races - Problems on Unitary method - Relation between Men, Days, Hours and Work - Problems on Man-Day-Hours method - Problems on alternate days - Problems on Pipes and Cisterns.					
UNIT IV	Data Interpretation and Data Sufficiency				6 Hours
Problems on tabular form - Problems on Line Graphs - Problems on Bar Graphs - Problems on Pie Charts -Different models in Data Sufficiency - Problems on data redundancy					
UNIT V	Analytical and Critical Reasoning				6 Hours
Problems on Linear arrangement - Problems on Circular arrangement - Problems on Double line-up - Problems on Selections - Problems on Comparisons - Finding the Implications for compound statements - Finding the Negations for compound statements- Problems on assumption - Problems on conclusions -Problems on inferences - Problems on strengthening and weakening of arguments .					
Total: 30 Hours					

FURTHER READING / CONTENT BEYOND SYLLABUS / SEMINAR :
REFERENCES:
1. Arun Sharma, "How to Prepare for Quantitative Aptitude for the CAT", 7 th edition, McGraw Hills publication, 2016.
2. Arun Sharma, "How to Prepare for Logical Reasoning for CAT", 4 th edition, McGraw Hills publication, 2017.
3. R S Agarwal, "A modern approach to Logical reasoning", revised edition, S.Chand publication, 2017.
4. R S Agarwal, „Quantitative Aptitude for Competitive Examinations“, revised edition, S.Chand publication, 2017.
5. Rajesh Verma, "Fast Track Objective Arithmetic", 3 rd edition, Arihant publication, 2018.
6. B.S. Sijwalii and InduSijwali, "A New Approach to REASONING Verbal & Non-Verbal", 2 nd edition, Arihnat publication, 2014.