

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA

Department of Computer Science and Engineering

S3 CSE

MA201	Linear algebra and complex analysis	4	Ms Lickny I
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CO1	Demonstrate mathematical reasoning through the concept of complex analysis .
CO2	Analyze Conformal mapping to change regions with complicated shapes into simpler ones.
CO3	Apply systems of linear equations to solve computational tasks including processing, designing and modeling .
CO4	Apply the properties of eigenvalues to simplify extensive calculations occurring in science and engineering

CO -PO-PSO mapping table																	
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		PSO1	PSO2	PSO3	
CO1	3	3		2										CO1	2		3
CO2	3	3		3										CO2	2		3
CO3	3	3		2	2									CO3			
CO4	2	2		2										CO4	2		3
Avg	2.75	2.75		2.25	2									Avg	2		3

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA

Department of Computer Science and Engineering

CS201	Discrete Computational Structures	4	Rani
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CO1	The student will be able to identify and solve homogeneous and non homogeneous ordinary differential equations
CO2	Solve problems in various domains by using recurrence relations, counting techniques and combinatorics.
CO3	Distinguish multi type proof techniques to prove Logical and mathematical statements occurring in engineering situations
CO4	Analyze Logical statements to validate arguments using logic techniques and Inference Theory.

CO -PO-PSO mapping table																
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		PSO1	PSO2	PSO3
CO1	3	3										2		CO1	3	
CO2	2	3												CO2	3	
CO3	3	3	2									2		CO3	3	
CO4	3	3												CO4	3	
Avg	2.75	3	2									2		Avg	3	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS203	Switching theory and logic Design	4	Ms Jasmy Davies,Ms Anrija
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CO1	Apply the basic concept of Boolean algebra for the simplification and implementation of logic functions.
CO2	To design simple Combinational circuits and Sequential circuits
CO3	Use of hardware description language for simple logic circuits
CO4	Apply algorithms for addition and subtraction on binary number BCD, Floating point numbers

CO -PO-PSO mapping table																
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		PSO1	PSO2	PSO3
CO1	3	3	2	3	2							2	CO1	3	2	3
CO2	3	3	2	3	2						2	2	CO2	2	3	2
CO3	3	3	3	3	3						3	3	CO3	3	2	3
CO4	2	2	3	3								2	CO4	2	2	3
Avg	2.75	2.75	2.5	3	2.33						2.5	2.25	Avg	2.5	2.25	2.75

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS205	Data Structures	4	Priya K V, Anly Antony
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CO1	Analyse algorithms and data structures in terms of time and memory complexity of basic operations.
CO2	Develop knowledge about data structures and inculcate ability to design algorithms for the creation, insertion, deletion, searching, and sorting of each data structure
CO3	Design algorithms for different applications to represent and manipulate data using linear and non-linear data structures.
CO4	Compare different memory management techniques and their significance to solve real world efficiently

CO -PO-PSO mapping table

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2		PSO 1	PSO 2	PSO 3
CO1	3	2	3	3	2						2	3		CO1	3	
CO2	2	2	3	3	2	2					2	3		CO2	2	2
CO3	2	2	3	3	2	2					2	3		CO3	2	2
CO4	2	2	3								2	2		CO4	2	
Avg	2.25	2	3	3	2	2					2	2.75		Avg	2.25	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS207	Electronics Devices and Circuits	3	Dr. Arun Thomas
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CO1	Examine various types of wave shaping circuits using diodes and transistors
CO2	Understand the working of voltage regulators and FET
CO3	Classify different types of amplifiers and oscillators using BJT and MOSFET
CO4	Articulate the concepts of operational amplifiers
CO5	Interpret different types of integrated circuits

CO -PO-PSO mapping table																		
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2			PSO 1	PSO 2	PSO 3	
CO1	3	3	3	2		2									CO1	3		
CO2	3	2	3	2		2									CO2	3		
CO3	3	2	3	2		2									CO3	3		
CO4	3	3	3	2		2									CO4	3		
	3	3	3	2		2									CO5			
Avg	3	2.5	3	2		2									Avg	3		

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA

Department of Computer Science and Engineering

HS210	Life Skills	3	Anusree K, Wilson Joseph
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CO1	Improve the communication, problem solving skills and writing skills of prospective engineers
CO2	Convey thoughts and ideas thereby equipping them to face interviews and group discussions
CO3	Instill moral and social values, loyalty and to learn to appreciate the rights of others
CO4	Analyze a particular problem critically and obtain a solution by working in a group or team

CO -PO-PSO mapping table

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		PSO1	PSO2	PSO3
CO1		3	2	1									CO1	3		
CO2						2			3	3			CO2	3		
CO3						3		3	2	2		3	CO3	3		
CO4		2		2		2	2	2	3	3		2	CO4	3		
Avg		2.5	2	1.5		2.33	2	2.5	2.67	2.67		2.5	Avg	3		

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS231	Data Structures Lab	1	Priya K V, Anly Antony
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CO1	To implement basic linear and non-linear data structures and their major operations
CO2	To implement applications using linear and non linear data structures
CO3	To implement algorithms for various sorting techniques.
CO4	Implement algorithms for various searching techniques

CO -PO-PSO mapping table																	
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2			PSO 1	PSO 2	PSO 3
CO1	2	2	2	2		2						2		CO1	2		2
CO2	2	2	2	2		2						3		CO2	2		2
CO3	2	2	2	2		2						3		CO3	2		2
CO4	2	2	2	2		2						3		CO4	2		2
Avg	2	2	2	2		2						2.75		Avg	2		2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA

Department of Computer Science and Engineering

CS233	Electronics Devices and Circuits	1	Dr. ArunThomas , Wilson Joseph
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CO1	Identify functions of digital multimeter, cathode ray oscilloscope and transducers in the measurement of physical variables.
CO2	Test and learn the characteristics of various active and passive components.
CO3	Design, Analyze and find the applications of simple analog circuits using active components.
CO4	Plot the characteristics of electronic devices to understand their behavior.

CO -PO-PSO mapping table

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2			PSO 1	PSO 2	PSO 3
CO1			3	3	2				2			2		CO1	1	2	
CO2		2	3	3	2				2					CO2	3	2	
CO3			3	3	2				2			2		CO3	3	2	
CO4	3	2	1	3	3				3	1		3		CO4	2	2	
Avg	3	2	2.5	3	2.25				2.25	1		2.33		Avg	2.67	3	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

S4 CSE

MA202	Probability Distributions,Transforms and Numerical Methods	4	Lickny I,Savitha Paul
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CO1	Apply the concept of discrete and continuous probability distributions in Engineering and real life situations
CO2	Solve various equations occurring in Engineering by applying different Numerical techniques
CO3	Analyse the concepts of Fourier and Laplace transforms in interdisciplinary environments

CO -PO mapping table

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		PSO1	PSO2	PSO3
CO1	3	3	2	2								2	CO1	2		
CO2	3	3	3										CO2	2		
CO3	3	3	3	2								2	CO3	2		
Avg	3	3	2.67	2								2		2		

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA

Department of Computer Science and Engineering

CS202	Computer Organization and Architecture	4	Ms Jasmy Davies,Mr Krishnadas
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CO1	Examine the functional units of the computer and basic concept of instruction set and addressing modes.
CO2	Demonstrate the instruction cycle,bus organization and arithmetic algorithms.
CO3	Differentiate interfacing standards for I/O devices , semiconductor memory and its working.
CO4	Design of ALU and Control unit of the Processor

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12		PSO1	PSO2	PSO3
CO1	3	3											CO1	3	2	3
CO2		3	3										CO2	2		3
CO3	3				3								CO3	3	3	3
CO4		3	3	3									CO4	3	3	3
Avg	3	3	3	3	3								Avg	2.75	2.67	3

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA

Department of Computer Science and Engineering

CS204	Operating System	4	Dr.M.Rajeswari
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CO1	Differentiate various operating systems by their functionality and apply process management with interprocess communication.
CO2	Assess various process synchronization mechanisms and use different CPU scheduling methods in order to allocate resources effectively.
CO3	Determine various deadlock handling techniques to prevent and/or avoid deadlock.
CO4	Make use of memory management techniques and storage management methods in real time.

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12			PS O1	PS O2	PS O3
CO1	3	3	3	2		3						3		CO 1	3	3	
CO2	3	3	3	3	2	3	3	3				3		CO 2	3	3	2
CO3	3	3	3	3	3	3	3	3				3		CO 3	3	3	2
CO4	3	3	3	3	3	3	3	3				3		CO 4	3	3	2
Avg	3	3	3	2.7 5	2.6 7	3	3	3				3		Av g	3	3	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS206	Object oriented design and Programming	4	Dr. Satheeshkumar, Sreetha E S
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CO1	Apply object oriented principles in software design process
CO2	Develop Java programs for real time applications using constructs and libraries in Java
CO3	Understand and apply various object oriented features to solve various computing problems
CO4	Use Graphical user Interface and Event Handling in Java,develop and deploy Applet in Java

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2		PSO 1	PSO 2	PSO 3
CO1	3	3	3	3								3	CO1	3	3	
CO2	3	3	3	3		2		2				2	CO2	3	3	
CO3	3	3	3	3		2		2				2	CO3	2	2	
CO4	3	3	3	3								3	CO4	3	3	
Avg	3	3	3	3		2		2				2.5	Avg	2.75	2.75	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS208	PRINCIPLES OF DATABASE DESIGN	3	DR R SUNDER
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CO1	Define the fundamental concepts of databases and apply Entity-Relationship (E-R) model in real time applications
CO2	Formulate the relational database principles using sql queries and relational algebra
CO3	Apply normalization Techniques to make efficient relational database design
CO4	Summarize the principles of data organization ,and Demonstrate query optimization and concurrent transaction processing

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	2	3	2	3	2							3	3	3	
CO2	2	2	3	3	2							2		3	
CO3	2	2	2									2	2	2	
CO4	2	3	2	2								2		3	2
Avg	2	2.5	2.25	2.67	2							2.25	2.5	2.75	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

HS200	Business economics	3	Viniminesh valsan
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CO1	To examine economic decision making,efficient allocation and utilisation of scarce resources and the scope of managerial economics.
CO2	To analyse market demand and supply,production techniques,calculation of costs,fixing the equilibrium price,investments,returns,profitability of firms and to determine the price under various market structures.
CO3	To evaluate the functioning of an economy,with national income,money supply, trade cycles and credit control methods by RBI.
CO4	To construct balance sheet,profitability index,it's interpretation,capital budgeting and cost benefit analysis.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1											2			2	
CO2				2							3			2	
CO3				2		3					3			2	
CO4				2		2					2			2	
Avg				2		2.5					2.5			2	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS232	FOSS LAB	1	Sheethal M S
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CO1	Identify and use various Linux commands
CO2	Implement shell scripts and GUI for specific needs
CO3	Use tools like GIT
CO4	Design and deploy Perform basic level application

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3				3							2	3	2	
CO2	3	2	2		3							2	3	2	2
CO3	3	2	3		3							3	3	3	2
CO4	3	2	2		3							3	3	3	2
Avg	3	2	2.33		3							2.5	3	2.5	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS234	Digital Systems Lab	1	Divya R
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CO1	To design and demonstrate functioning of various combinational circuit
CO2	To design and demonstrate functioning of sequential circuits
CO3	To implement practical problems using digital IC
CO4	To function effectively as an individual and in a team to accomplish a given task

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	3	2						3	2		2		
CO2	3	3	3	2						3	2		2		
CO3	3	3	3	2						3	2	2	2		
CO4						3		2	3		3	2	2		
Avg	3	3	3	2		3		2	3	3	2.25	2	2		

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

S5 CSE

CS301	Theory of Computation	3	Divya R
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CO1	Students will be able to define the mathematical principles behind theory of computation.
CO2	Students will be able to distinguish different types of automata like Finite Automata, Push down Automata, Linear Bounded Automata and Turing Machine.
CO3	Students will be able to correlate different types of automata to solve real world applications.
CO4	Students will be able to identify the different computational problems and their associated complexity.

CO -PO mapping table															
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	3	3	3				2			2	2	2	2	
CO2	2	3	3	3				2			2	2	3	2	
CO3	2	2	2	3			2	2			2	2	2		
CO4	2	2	2	3				2			2	2	3		
Avg	2	2.5	2.5	3			2	2			2		2.67	2	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS303	System Software	3	Ms.Linnet Tomy,Ms.Uma
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CO1	Classify various system software features
CO2	Illustrate the working of one pass,two pass and multi pass assembler
CO3	Illustrate the working of existing system software's (Linker,loader and macro processor)
CO4	Compare the features of modern editing and debugging tools

CO -PO mapping table															
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	2	2	2									3		3
CO2	3	3	2	2									3	3	2
CO3	3	3	2	2		2						2	3	2	2
CO4	3	2	2	2	2								3	3	3
Avg	3	2.5	2	2	2	2						2	3	2.6	3.3

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS305	Microprocessors and Microcontrollers		Krishnadas J
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CO1	Describe different modes of operations of a typical microprocessor and microcontroller.
CO2	Design and develop 8086 assembly language programs using software interrupts and various assembler directives.
CO3	Interface microprocessors with various external devices.
CO4	Analyze and compare the features of microprocessors and microcontrollers.

CO -PO mapping table															
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1			2	2			2							2	
CO2	2	2	2	3	2		2						3	2	2
CO3	3	3	3	3	2								3	3	2
CO4	3	3	2	2	2		2	2					3	3	2
Avg	2.67	2.67	2.25	2.5	2		2	2					3	2.5	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS307	Data Communication		Deepa Devassy
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CO1	Identify and list various issues present in the design of a data communication system.
CO2	Apply the time domain and frequency domain concepts of signals in data communication
CO3	Compare and select transmission media based on transmission impairments and channel capacity.
CO4	Select and use appropriate signal encoding techniques and multiplexing techniques for a given scenario.
CO5	Design suitable error detection and error correction algorithms to achieve error free data communication and explain different switching techniques.

CO -PO mapping table															
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3										2		2
CO2	3	3		2								3			2
CO3	3	3	2	3								3			2
CO4	3	3	3									3	2		2
Avg	3	3	2.67	2.5								3	2		2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS309	Graph Theory and COmbinatorics	3	Anly Antony , Sreetha E S
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CO1	Demonstrate the fundamental concepts in graph theory, properties and types of graphs and trees
CO2	Apply the knowledge of graphs and trees to solve the real life problems
CO3	Apply the knowledge of advanced graph properties like edge and vertex connectivity to solve real life problems using efficient algorithms.
CO4	Describe various matrix representations of graph and its properties

CO -PO mapping table																
CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2		PSO 1	PSO 2	PSO 3
CO1	3	3	3	3								3	CO1	3	3	
CO2	3	3	3	3		2		2				2	CO2	3	3	
CO3	3	3	3	3		2		2				2	CO3	2	2	
CO4	3	3	3	3								3	CO4	3	3	
Avg	3	3	3	3		2		2				2.5	Avg	2.75	2.75	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS361	Soft Computing	3	Dr.Sunder R , Mr. Willson Joseph C
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CO1	Understand the fundamental principles and list out various neural network training strategies.
CO2	Summarize the different learning methods and use in artificial intelligence
CO3	Design Different fuzzification and defuzzification methods using fuzzy Systems
CO4	Apply genetic algorithm concepts in neural network and fuzzy system.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	2								3		3
CO2	3	2	3	2								3	3	2
CO3	3		2	1	1							3	2	2
CO4	2	3	2	3	2							3	2	2
Avg	2.75	2.33	2.5	2	1.5							3	2.33	2.25

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS341	Design Project	2	UMA E S Anila Thomas, Ann Rija Paul
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CO1	Choose and think innovatively on the development of emerging components, products, processes or technologies in the field of computer science
CO2	Analyse the problem requirements and arrive at workable design solutions
CO3	Design a prototype with respect to the current technologies
CO4	Develop and design products which meets the needs of the society

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3					3	3	3	3		3	3	3	3	3
CO2		3	3	3					3			3	2	3	3
CO3					3				3			3	3	3	3
CO4		3	3	3	3	3	3		3		3	3	3	3	2
Avg	3	3	3	3	3	3	3	3	3		3	3	2.75	3	2.75

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS331	System Software Lab	1	Ms.Linnet Tomy,Ms.Uma
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CO1	Compare and analyze CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority.
CO2	Implement basic memory management schemes like paging.
CO3	Implement synchronization techniques using semaphores etc.
CO4	Implement banker's algorithm for deadlock avoidance.
CO5	Implement memory management schemes and page replacement schemes and file allocation and organization techniques.
CO6	Implement system software such as loaders, assemblers and macro processor.

CO -PO-PSO mapping table															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1			1	2											
CO2			2	2									2		
CO3			2	2									3	3	2
CO4			3	2									3	3	2
Avg			2	2									2.67	3	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS333	Application Development Lab	1	Ms. Livya George, Ms. Jasmy Davis
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CO1	Design and implement a database for a given problem using database design principles.
CO2	Apply stored programming concepts (PL-SQL) using Cursors and Triggers.
CO3	Use graphical user interface, Event Handling and Database connectivity to develop and deploy applications and applets.
CO4	Develop medium-sized project in a team.
CO5	Develop an aptitude towards database programming
CO6	Understand and apply the project creation techniques

CO -PO-PSO mapping table

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		3	3	1									2		
CO2	2		3		1										
CO3	2	1	3		1										
CO4		3	3	2	3	1	1	1	3	3	3	3			
CO5						2	1	3				3			
CO6	2					2		1	3		3	3			
Avg	2	2.33	3	1.5	1.67	1.67	1	1.67	3	3	3	3	2		

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Department of Computer Science and Engineering

S6 CSE

CS302	DESIGN AND ANALYSIS OF ALGORITHMS	4	Shyam Krishna, Priya K V
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CO1	Analyze a given algorithm and express its time and space complexities in asymptotic notations and to Solve recurrence equations using Iteration Method, Recurrence Tree Method and Master’s Theorem.
CO2	Apply the concepts of advanced data structures like tree and graph
CO3	Design efficient algorithms using different strategies such as Divide and Conquer, dynamic programming, greedy method, backtracking, branch and bound etc. for solving problems.
CO4	Classify computational problems into P, NP, NP-Hard and NP-Complete.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	2	3							2	3	3	3	
CO2	2	2	3	3								3	3	3	
CO3	2	2	3	2								2	3	3	
CO4	2	2	2	2								2	3	3	3
Avg	2.25	2.25	2.5	2.5							2	2.5	3	3	3

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Department of Computer Science and Engineering

CS304	COMPILER DESIGN	3	DIVYA R, SREETHA E S
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CO1	Understand the concepts and different phases of compilation with compile time error handling and represent language tokens using regular expressions, context free grammar and finite automata
CO2	Compare top down with bottom up parsers, and develop appropriate parser to produce parse tree representation of the input.
CO3	Implement intermediate code for statements and Design syntax directed translation schemes for a given context free grammar
CO4	Apply optimization techniques to intermediate code and generate machine code for high level language program

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	2	3	3	3									2	2	
CO2	2	3	3	3									3	2	
CO3	2	2	2	3									2		
CO4	2	2	2	3									3		
Avg	2	2.5	2.5	3									2.5	2	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS306	Computer Networks	3	Deepa Devassy, Anly Antony M
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CO1	Understand the different aspects of networks, protocols and network design models.
CO2	Examine various Data Link layer design issues, Data Link protocols and recent updates.
CO3	Select appropriate routing algorithms for a network functioning with different network layer protocols.
CO4	Summarize the important aspects and functions of transport layer and application layer in internetworking.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	3	2								3	2	2	
CO2	3	3	2	2								3		2	
CO3	3	3	3	3								3		3	2
CO4	3	3	3	2								3		2	2
Avg	3	3	2.75	2.25								3	2	2.25	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS308	Software Engineering & Project Management	3	Mr. Willson Joseph C , Dr. Satheesh Kumar
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CO1	Identify suitable life cycle models to be used.
CO2	Analyze a problem, identify and define the computing requirements to the problem.
CO3	Translate a requirement specification to Design using an appropriate software engineering methodology.
CO4	Develop software projects based on current technology, by managing resources economically and keeping ethical values.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	3										3	3	3
CO2	3	3	3	3		2			2	2	2	2	3	3	
CO3	3	3	3	3						2			3	3	
CO4	3	3	3	3		3		3	2	3	3	3	3	3	3
Avg	3	3	3	3		2.5		3	2	2.33	2.5	2.5	3	3	3

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Department of Computer Science and Engineering

HS300	Principle of Management	3	Mr. Willson Joseph C,Anly Antony M
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CO1	Recall and identify the relevance of management concepts
CO2	Describe and relate management techniques adopted within an organization
CO3	Apply management techniques for meeting current and future management challenges faced by the organization
CO4	Compare the management theories and models critically and to inspect and question its validity in the real world

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1						3					3				
CO2						2		3	3		3	3		2	
CO3									2		3	3		2	
CO4						3		3	2		3	2			
Avg						2.67		3	2.33		3	2.67		2	

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS364	Mobile Computing	3	Bhagyasree P V
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CO1	Understand about various Mobile Computing applications, services and architecture.
CO2	Understand various technology trends for next generation cellular wireless networks.
CO3	Describe protocol architecture of Wireless LAN technology.
CO4	Understand security issues in mobile computing.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	3	2		2						2	3	2	3
CO2	3	3	3	2		2		2				2	2	2	3
CO3	3	3	2			2							3	3	2
CO4	3	2				2							2	2	2
CO5	3	2	2	2		2						2	3	2	2
CO6	2	2	2	2		3						2	3	2	2
Avg	2.83	2.5	2.4	2		2.17		2				2	2.67	2.17	2.33

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS368	Web Technology	3	Scaria Alex
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CO1	Understand the components in Web Technology
CO2	Develop web pages using HTML, CSS, Javascript, JQuery
CO3	Know the different information interchange formats like XML and JSON
CO4	Design web sites using php

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2		3							3	3	3	2
CO2	3	3	3		3			3				3	3	3	3
CO3	3	3	3	3	3			3				3	3	3	3
CO4	3	3	3		3			3				3	3	3	3
Avg	3	3	2.75	3	3			3				3	3	3	2.75

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CO3			3	3	3	3									3
CO4			3	3	3	3			3						3
Avg			3	3	3	3			3						3

CS352	Comprehensive Viva	1	
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CO1	Assess the knowledge gained in basic core courses
CO2	Discuss the fundamental aspects of engineering problems/situations and give answers in dealing with them.
CO3	Facilitate students with deep knowledge which will help them to be good professionals.
CO4	Develop interpersonal skills through discussions.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	2	2											
CO2			3	3									2		
CO3						3	3	3			3	3	3	3	2
CO4									3	3			3	3	2
Avg	3	3	2.5	2.5		3	3	3	3	3	3	3	2.67	3	2

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Department of Computer Science and Engineering

S7 CSE

CS401	Computer Graphics	4	Ms Linnet Tomy,Ms Jasmy Davies
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CO1	Compare various graphics devices and visible surface detection methods
CO2	Apply the algorithms for line drawing, circle drawing, polygon filling and clipping
CO3	Apply various geometrical transformation and projection techniques
CO4	Interpret various concepts and basic operations of image processing

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	2	3	2		2							3	3	2
CO2	3	2	3	3		2						2	3	3	3
CO3	3	2	3	3		2						2	3		1
CO4	3		2	2	2	2						2	3	3	3
Avg	3	2	2.75	2.5	2	2						2	3	3	2.25

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Department of Computer Science and Engineering

CS403	Programming Paradigms	3	Shyam Krishna, Dr. Satheesh Kumar
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CO1	Compare the core programming constructs like scope, binding of names and outline various control flow structures in different programming languages
CO2	Analyse different data types in various programming languages
CO3	Analyse subroutines & control abstraction mechanisms of various programming languages
CO4	Compare and contrast object oriented constructs, concurrency constructs and run-time program management in different programming languages

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	2	2	2							2	2	3	3
CO2	3	3	2	2	2		1	2		2	2	3	2	3	3
CO3	3	3	2	2	2				2	2	3	3	3	3	3
CO4	3	3	2	2	2			3	2	2	2	2	3	3	3
Avg	3	3	2	2	2		1	2.5	2	2	2.33	2.5	2.5	3	3

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS405	Computer System Architecture	4	Livya george, Anusree k
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CO1	Summarize different parallel computer models
CO2	Analyze the advanced processor technologies
CO3	Interpret memory hierarchy
CO4	Compare different multiprocessor system interconnecting mechanisms and interpret the mechanisms for enforcing cache coherence
CO5	Analyze different message passing mechanisms and different pipe lining techniques
CO6	Appraise concepts of multi-threaded and data flow architectures

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO1	PSO2	PSO3
CO1	3.00	3.00											3.00	3.00	3.00
CO2			3.00	3.00									3.00	3.00	3.00
CO3			3.00	3.00									3.00	3.00	3.00
CO4			3.00	3.00									3.00	3.00	3.00
CO5			3.00	3.00									3.00	3.00	3.00
CO6			3.00	3.00									3.00	3.00	3.00
Avg	3.00	3.00	3.00	3.00									3.00	3.00	3.00

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Department of Computer Science and Engineering

CS407	Distributed Systems	3	Scaria Alex
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CO1	Demonstrate knowledge of the basic elements and core architectural aspects of distributed systems
CO2	Apply appropriate distributed system principles in ensuring transparency, consistency and fault tolerance in distributed file systems.
CO3	Analyze different client server communication models and their practical applications
CO4	Compare the different process synchronization algorithms and its application in real time systems.

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	P O6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12			PS O1	PS O2	PS O3
CO1	3	3	3	2	3	3	3							CO 1	3	3	
CO2	3	3	3	3	3	3	3	3				3		CO 2	3	3	
CO3	3	3	3	2	2		3					3		CO 3	3	3	2
CO4	2	3	3	3	2		3					3		CO 4	3	3	2
Avg	2.7 5	3	3	2.5	2.5	3	3	3				3		Av g	3	3	2

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Department of Computer Science and Engineering

CS409	Cryptography & Network Security	3	Ms. Roshni R Menon
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CO1	Analyze the different classical encryption techniques
CO2	Make use of the various mathematical concepts for different cryptographic algorithms
CO3	Apply Cryptographic algorithms for Encryption and Key-Exchange in real time projects.
CO4	Summarize different authentication and digital signature schemes
CO5	Identify the security issues in network, transport and application layers and outline appropriate security protocols

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	2			3						3	3	3	2
CO2	3	3	3	3		3						3	3	3	2
CO3	3	3	3			3		3				3	3	3	2
CO4	3	3	3			3		3				3	3	3	2
CO5	3	3	3			3		3				3	3	3	2
Avg	3	3	2.75	3		3		3				3	3	3	2

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Department of Computer Science and Engineering

CS463	Digital Image Processing	3	Sheethal M S
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CO1	compare different methods for image acquisition, storage and representation in digital devices and computers
CO2	Demonstrate role of image transforms in representing, highlighting, and modifying image features
CO3	Examine the mathematical principles in digital image enhancement and apply them in spatial domain and frequency domain
CO4	Examine the mathematical principles in image segmentation,Representation and description of images

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3		2	3									3	2	2
CO2	3	2	3	2									2	3	2
CO3	3	2	2	2									3	3	2
CO4	3	2	2	1									3	3	2
Avg	3	2	2.25	2									2.75	2.75	2

SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY, KODAKARA
Department of Computer Science and Engineering

CS467	Machine Learning	3	Annrija paul
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CO1	Identify the basic Principles and Applications of Machine Learning in various real time problems such as dimensionality reduction
CO2	Illustrate the working of classifier models such as SVM, Neural networks and Identify classifier model for typical machine learning application
CO3	Apply different classification and clustering algorithms and identify its applicability in real life problems
CO4	Identify the state sequence and evaluate a sequence emission probability from given HMM

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1			2	1										
CO2			3	3								2		
CO3			3	3								3	3	2
CO4			3	3								3	3	2
Avg			2.75	2.5								2.67	3	2

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Department of Computer Science and Engineering

CS465	Bioinformatics	3	Dr.M.Rajeswari
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CO1	Demonstrate the need and applications of bioinformatics
CO2	Analyze and apply various biological databases such as nucleic acid and protein sequence databases to perform sequence analysis.
CO3	Determine the aligned sequence using Global and Local alignment technique to construct phylogenetic tree
CO4	Investigate the principles of genomics, protein secondary structure prediction and various gene prediction techniques

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PS O1	PS O2	PS O3
CO1	3	3	2			2		3					3		
CO2	3	3	3	3	3	3		3					3	3	3
CO3	3	3	3	3	3	3		3					3	3	3
CO4	3	3	3	3	3	3		3					3	2	2
Avg	3	3	2.75	3	3	2.75		3					3	2.67	2.67

CS451	Seminar and Project Preliminary	2	Ms. Deepa Devassy, Mr. Shyam Krishna K
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CO1	Analyze a current topic of professional interest and present it before an audience
CO2	Identify an engineering problem, analyze it and propose a work plan to solve it.
CO3	Design a model with respect to recent technologies in the field of computer science.
CO4	Describe, compare and evaluate different technologies

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3	PSO 4
CO1	3					3	3	3	3		3	3	3	2	3	
CO2		3	3	3					3			3	3	3	3	
CO3					3				3			3	3	3	3	
CO4		3	3	3	3	3	3		3		3	3	2	3	3	
CO5									3	3	3	3		2		
Avg	3	3	3	3	3	3	3	3	3	3	3	3	2.75	2.75	3	

CS431	Compiler Design Lab	1	Divya R, SCARIA ALEX Sheethal M S, SREETHA E S
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CO1	Analyze a current topic of professional interest and present it before an audience
CO2	Identify an engineering problem, analyze it and propose a work plan to solve it.
CO3	Design a model with respect to recent technologies in the field of computer science.
CO4	Describe, compare and evaluate different technologies

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1		3	3	2	3			2	2			3	3		
CO2		3	3	3	3			2	2			3	3		2

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CO3	2	3	3	2				2	2			3	3	2	2
CO4		3	3	2				2	2			3	3	2	2
Avg	2	3	3	2.25	3			2	2			3	3	2	2

S8 CSE

CS402	Data Mining and Warehousing	3	Annrija Paul,Uma E S
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CO1	Identify the key process of Data mining and Warehousing and apply appropriate techniques to convert raw data into suitable format for practical data mining tasks
CO2	Evaluate various classification algorithms using performance matrices
CO3	Analyze the different categories of clustering algorithms and its applications
CO4	Apply association rule mining in real world scenario to extend data mining methods to the new domains like web mining.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	2		2	3	2						3	3	3	3	1
CO2	2		3	2	2						3	3	3	2	2
CO3	2		3	2	2						3	3	3		1
CO4	2		2	2	2						3	3	2	3	
Avg	2		2.5	2.25	2						3	3	2.75	2.67	1.33

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Department of Computer Science and Engineering

CS404	Embedded Systems		Arun Thomas
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CO1	Understand the process and concepts of embedded system and discuss various software components involved in embedded system design and development.
CO2	Model the operation of a given embedded system and to design simple tasks to run on an RTOS
CO3	Design embedded products and firmware using firmware languages
CO4	Demonstrate various embedded hardware and firmware using SDE's and to understand various embedded system networks and its latest trends.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1							3					2			
CO2	3	3	3	3	3	3		3				2	3		
CO3	3	3	3	3	2	3						2	3		
CO4	3	2	3	3	3	3						2	3	3	3
Avg	3	2.67	3	3	2.67	3	3	3				2	3	3	3

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Department of Computer Science and Engineering

CS 472	Principles of Information Security	3	Sheethal M S, Roshni R Menon
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CO1	Appreciate the common threats faced today & Interpret the foundational theory behind information security
CO2	Design a secure system & Identify the potential vulnerabilities in software
CO3	Appreciate the relevance of security in various domains
CO4	Develop secure web services and perform secure e-transactions

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	2	2	2		3		3				2	3	3	1
CO2	3	2	2	2		3		3				2	3	2	2
CO3	3	2	3			2		3				2	3		1
CO4	3	2	3			2		3				2	2	3	
CO5	3	2	2					3				2	3	2	2
CO6	3	2	3	3				3				2	3	2	2
Avg	3	2	2.5	2.33		2.5		3				2	2.83	2.4	1.6

