

24CH101-ENGINEERING CHEMISTRY

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Examine the role of polymers in different industrial sectors.	K3
CO2	Identify the suitability of batteries for various fields.	K3
CO3	Apply the fundamental principles of chemical sensors, cheminformatics and their applications across various industries.	K3
CO4	Analyze the types of smart materials used in various engineering fields.	K4
CO5	Explore the applications of nanomaterials in various fields, considering their advantages and limitations.	K4
CO6	Integrate the concepts of chemistry for various engineering applications.	K5

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	-	2	2	-	-	-	-	1	-	-
CO2	3	2	-	-	-	1	1	-	-	-	-	1	-	-
CO3	3	2	-	-	-	2	1	-	-	-	-	1	-	-
CO4	3	2	-	-	-	1	1	-	-	-	-	1	-	-
CO5	3	2	-	-	-	1	1	-	-	-	-	1	-	-
CO6	3	2	-	-	-	2	2	-	-	-	-	1	-	-

24CS101 Programming in C++

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Solve problems using basic constructs in C++	K3
CO2	Implement C++ programs using pointers and functions.	K3, K4
CO3	Apply object-oriented concepts and solve real world problems.	K3
CO4	Develop C++ programs using operator overloading and polymorphism.	K3, K4
CO5	Implement C++ programs using Files and exceptions.	K3, K4
CO6	Develop applications using C++ concept	K3, K4, K6

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	2	2	-	-	-	-	-	2	1	-
CO2	3	2	1	-	-	1	1	-	-	-	-	-	2	1	-
CO3	3	2	1	-	-	2	1	-	-	-	-	-	2	1	-
CO4	3	2	3	-	-	1	1	-	-	-	-	-	2	1	-
CO5	3	2	1	-	-	1	1	-	-	-	-	-	2	1	-
CO6	3	3	3	-	1	-	-	1	1	1	-	-	2	1	-

24CS102 SOFTWARE DEVELOPMENT PRACTICES

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Understand basic software engineering practices effectively	K3
CO2	Apply version control using Git and GitHub, and manage code repositories proficiently	K6
CO3	Design web applications using HTML, CSS, and JavaScript	K3
CO4	Analyze problems and create solutions using CSS for better web page presentation and usability	K6
CO5	Develop interactive web pages using JavaScript with an event handling mechanism	K6
CO6	Apply the technological changes and improve skills continuously	K6

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	1	1	1	-	-	2	1	2	1	2	2	1
CO2	3	2	3	1	2	1	-	-	2	1	2	1	-	2	-
CO3	3	3	3	1	2	1	-	1	2	1	2	1	2	-	2
CO4	3	3	3	1	2	1	-	-	2	1	2	1	-	2	2
CO5	3	3	3	1	2	1	-	1	2	1	2	1	2	-	2
CO6	3	2	3	1	2	1	-	1	2	1	2	1	-	2	-

24EC102 DIGITAL PRINCIPLES AND SYSTEM DESIGN (Lab Integrated)

COURSE OUTCOMES:

.CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Apply Boolean algebra to simplify and implement digital circuits.	K3
CO2	Design combinational circuits to meet specific functional requirements using logic gates.	K2
CO3	Demonstrate the operation of counters and shift registers using flip-flops in sequential circuits.	K3
CO4	Analyze synchronous sequential circuits to determine their behavior and performance characteristics.	K3
CO5	Evaluate various types of memory devices, discussing their roles and functionalities in digital systems.	K2
CO6	Construct combinational circuits using Programmable Logic Devices (PLDs) to solve complex digital design problems.	K3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-
CO2	3	3	2	2	-	-	-	-	-	-	-	-	3	-	-
CO3	3	3	2	2	-	-	-	-	-	-	-	-	3	-	-
CO4	3	3	2	2	-	-	-	-	-	-	-	-	3	-	-
CO5	3	3	2	2	-	-	-	-	-	-	-	-	3	-	-
CO6	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-

24EC101 ELECTRONIC DEVICES AND CIRCUIT THEORY

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Explain the operating principles of electronic devices	K2
CO2	Analyze the V-I characteristics of electronic devices.	K2
CO3	Design basic electronic circuits using various electron devices	K3
CO4	Analyze electric circuits using network theorems.	K3
CO5	Evaluate the Performance of Electrical and Electronic Circuits Using Simulation Tools	K3
CO6	Develop simple circuits for real time applications.	K3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	2	1	-	1	-	1	1	2	-	1	1	-	-
CO2	2	1	2	-	-	1	2	1	1	2	-	2	3	-	-
CO3	2	1	2	2	1	1	-	1	1	2	-	1	3	1	1
CO4	1	2	2	2	-	1	-	1	1	2	-	1	2	-	-
CO5	1	2	2	1	-	1	-	1	1	2	-	1	3	-	-
CO6	1	-	-	1	1	1	1	1	3	1	3	2	2	-	-

DEPARTMENT: CSBS

24MA102 INTRODUCTION TO CALCULUS, PROBABILITY AND STATISTICS

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Evaluate the differentiation and integration problems using concepts of calculus.	K3
CO2	Compute the expected values, moments, variance and interpret their significance	K2
CO3	Analyze the discrete probability distributions for countable outcomes	K1, K3
CO4	Analyze the continuous probability distributions to continuous variables.	K1, K3
CO5	Develop proficiency in gathering, analyzing, and interpreting data from diverse sources.	K2, K3
CO6	Apply probability concepts to solve problems involving uncertainty.	K3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	1	-	-	-	-	-	-	-	1	-	-	-
CO2	3	3	1	-	-	-	-	-	-	-	1	1	-	-	-
CO3	3	2	2	2	-	-	-	-	-	-	1	1	-	-	-
CO4	3	2	2	2	-	-	-	-	-	-	1	1	-	-	-
CO5	3	3	2	1	-	1	-	-	-	-	1	1	-	-	-
CO6	3	2	1	1	-	-	-	-	-	-	1	1	-	-	-

24PH102 FUNDAMENTALS OF PHYSICS +LAB:

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Obtain the solution for oscillator using differential equation.	K3
CO2	Apply the concept of interference to form Newton's rings and calculate the wavelength of light	K4
CO3	Derive the Schrodinger wave equation and determine the solution for a particle in a one-dimensional box.	K4
CO4	Calculate the atomic packing factor and d spacing of crystals	K3
CO5	Analyze and determine the properties of laser and optical fiber and its applications.	K4
CO6	Calculate the packing factor for various crystal structure.	K3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	1	1	1	1	-	-	-	-	-	-	-
CO2	3	1	1	1	1	1	1	1	-	-	-	-	-	-	-
CO3	2	2	1	1	1	1	1	1	-	-	-	-	-	-	-
CO4	3	1	1	1	1	1	1	1	-	-	-	-	-	-	-
CO5	2	2	1	1	1	1	1	1	-	-	-	-	-	-	-
CO6	2	2	-	-	1	-	-	1	-	-	-	-	-	-	-

24GE101-PRINCIPLES OF ELECTRICAL ENGINEERING

COURSE OUTCOMES

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Summarize the behavior electrical circuits	K2
CO2	Solve the DC circuits using network theorems	K3
CO3	Interpret the concepts of AC circuits	K2
CO4	Discuss the electrostatic and magnetic fields with circuit laws and analyze the performance of transformers	K3
CO5	Explain the various sensors and Demonstrate electric wiring	K2
CO6	Summarize the behavior electrical circuits	K2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	1	-	-	-	-	-	1	-	-	1
CO2	3	2	2	2	1	1	-	-	-	-	-	1	-	-	1
CO3	3	2	2	2	1	1	-	-	-	-	-	1	-	-	1
CO4	3	2	2	2	1	1	-	-	-	-	-	1	-	-	1
CO5	2	2	2	2	1	1	-	-	-	-	-	1	-	-	1
CO6	2	2	-	-	1	-	-	1	-	-	-	-	-	-	1



R.M.D. ENGINEERING COLLEGE

(An Autonomous Institution)

R.S.M Nagar, Kavaraipeitai-6012

DEPARTMENT OF SCIENCE AND HUMANITIES

Regulation (2024)

COURSE OUTCOMES (2024-2025)

SEMESTER – II

DEPARTMENT: CSE, AIML, & IT

24MA201 - LINEAR ALGEBRA AND APPLICATIONS

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Solve the system of linear equations using gauss elimination and gauss jordan method.	K3
CO2	Analyze vector spaces to determine their bases and dimensions.	K4
CO3	Apply gram-schmidt process to ortho normalize sets of vectors.	K3
CO4	Apply rank nullity theorem to analyse linear transformations.	K3
CO5	Compute the eigenvalues and eigenvectors using singular value decomposition.	K3
CO6	Understand the ideas of least squares approximations and its applications	K2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	-	-	-	1	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-	-
CO3	3	2	-	-	1	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	1	-	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	-	1	-	-	-	-	-	-	-	-	-	-
CO6	3	-	2	-	-	-	-	-	-	-	-	1	-	-	-

24PH201 PHYSICS FOR INFORMATIONSCIENCE

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Derive electrical and electron thermal conductivities using classical free theory	K2
CO2	Calculate the electrical conductivity and bandgap in Intrinsic semiconductors	K2
CO3	Associate the basic principles of working of laser and their applications in fiber optics.	K2
CO4	Calculate the energy eigen value and eigen function for a particle in a one-dimensional and three dimensional box using Schrodinger wave equations.	K2
CO5	Use quantum operators to frame equations for logic gates in Quantum computing..	K2
CO6	Relate the quantum properties of nanoscale materials with their applications	K2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	-	-	-	-	-	2	2	-	2	-	-	-
CO2	2	1	-	-	-	-	-	-	2	2	-	2	-	-	-
CO3	2	1	-	-	-	-	-	-	2	2	-	2	-	-	-
CO4	2	1	-	-	-	-	-	-	2	2	-	2	-	-	-
CO5	2	1	-	-	-	-	-	-	2	2	-	2	-	-	-
CO6	2	1	-	-	-	-	-	-	2	2	-	2	-	-	-

24CS201 DATA STRUCTURES (LAB INTEGRATED)

COURSE OUTCOMES:

CO's	Course Outcomes	Highest cognitive level
Upon completion of the course, the students will be able to:		
CO1	Analyze algorithms and abstract data types (ADTs).	K3
CO2	Evaluate fundamental data structures.	K3
CO3	Implement linked data structures and its application.	K3
CO4	Apply advanced tree data structures.	K3
CO5	Understand basic graph theory concepts.	K3
CO6	Evaluate various searching and sorting algorithm	K2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C O1	3	3	3	1	1	-	-	-	2	1	-	1	-	-	-
CO2	3	2	3	1	2	-	-	-	2	1	-	1	-	-	-
CO3	3	3	3	1	2	-	-	1	2	1	-	1	-	-	-
CO4	3	3	3	1	2	-	-	-	2	1	-	1	-	-	-
CO5	3	3	3	1	2	-	-	1	2	1	-	1	-	-	-
CO6	2	3	3	-	3	-	-	1	2	2	-	3	-	-	-

24CS202 JAVA PROGRAMMING (LAB INTEGRATED)

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Solve core Java programming concepts.	K3
CO2	Utilize object-oriented programming (OOP) principles.	K3
CO3	Demonstrate competency in handling exceptions and implementing multi- threading.	K6
CO4	Develop expertise in input/output (I/O) operations and file handling.	K6
CO5	Apply advanced Java programming concepts with generics and lambda expressions.	K6
CO6	Implement database connectivity using JDBC.	K6

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	1	1	2	2	2	1	3	2	1	1
CO2	3	3	3	3	3	1	1	2	2	2	3	3	3	3	2
CO3	3	3	3	3	3	-	-	-	-	-	2	3	2	3	3
CO4	3	3	3	3	3	-	-	-	-	-	3	3	3	2	3
CO5	3	3	3	3	3	-	-	-	-	-	3	3	3	3	3
CO6	3	3	3	3	3	-	-	-	-	-	-	3	3	3	3

24AM201 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (Lab Integrated)

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Elaborate the basics and applications of Artificial Intelligence.	K2
CO2	Apply the basics of Python programming to solve Problems.	K3

CO3	Use python libraries to solve simple ML problems.	K3
CO4	Outline the different types of Machine Learning Algorithms.	K2
CO5	Use Machine Learning Algorithms to solve real world Problems.	K3
CO6	Outline the recent developments in the field of Artificial Intelligence.	K2

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	3	3	3	3	2	2	2	3	2	2
CO2	3	3	3	2	2	3	3	3	3	2	2	2	3	2	2
CO3	3	3	3	2	2	3	3	3	3	2	2	2	3	3	2
CO4	3	3	3	2	2	3	3	3	3	2	2	2	3	3	3
CO5	3	3	3	2	2	3	3	3	3	2	2	2	3	3	3
CO6	3	3	3	2	2	3	3	3	3	2	3	3	3	3	3

24MC102 ENVIRONMENTAL SCIENCE AND SUSTAINABILITY

COURSE OUTCOMES:

Cos	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	To investigate and use conservational practices to protect natural resources	K2,K3
CO2	To identify the causes of pollutants and illustrate suitable methods for pollution abatement	K2,K3
CO3	To analyse the values of biodiversity and its conversational methods	K2,K3
CO4	To classify suitable sustainable development practices and apply it in day to day life	K3,K4
CO5	To assess the impacts of human population and suggest suitable solutions.	K3,K4,K5
CO6	To develop innovative solutions and strategies to address sustainability challenges	K4,K5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	2	3	-	-	2	-	3	-	-	1
CO2	3	2	-	-	-	2	3	-	-	2	-	3	-	-	1
CO3	3	2	-	-	-	2	3	-	-	2	-	3	-	-	1
CO4	3	2	-	-	-	2	3	-	-	2	-	3	-	-	1
CO5	3	2	-	-	-	2	3	-	-	2	-	3	-	-	1
CO6	3	2	-	-	-	2	3	-	-	2	-	3	-	-	1

DEPARTMENT: ECE
24MA202 -TRANSFORMS AND COMPLEX ANALYSIS

COURSE OUTCOMES:

Cos	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Determine laplace transform and inverse laplace transform of simple functions.	K1,k2
CO2	Determine z- transform and inverse z- transform of simple functions.	K1, k2
CO3	Solve ordinary differential equations using laplace transform and difference equations using z-transform.	K3
CO4	Construct an analytic function and analyze conformal mapping.	K3
CO5	Evaluate the real integrals using complex integration.	K4
CO6	Identify singularities using taylor's and laurent's series.	K1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3S
CO1	2	1	1	-	-	-	-	-	1	-	-	-	-	-	-
CO2	2	1	1	-	-	-	-	-	1	-	-	-	-	-	-
CO3	2	1	1	-	-	-	-	-	1	-	-	-	-	-	-
CO4	2	1	1	-	-	-	-	-	1	-	-	-	-	-	-
CO5	2	1	1	-	-	-	-	-	1	-	-	-	-	-	-
CO6	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-

24CH201-CHEMISTRY FOR ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTCOMES:

CO 's	COURSE OUTCOMES	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	To identify the suitability of batteries for various fields.	K2
CO2	To analyze the different types and impacts of corrosion, and evaluate methods for corrosion control and prevention.	K4
CO3	To apply the fundamental principles of chemical sensors, cheminformatics and their applications across various industries.	K3
CO4	To analyze the types of smart materials used in various engineering fields.	K4

CO5	To explore the applications of nanomaterials in various fields, considering their advantages and limitations.	K4
CO6	To integrate the concepts of chemistry for various engineering applications.	K5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	-	-	1		-	-	-	-	1	1	-	1	1
CO2	3	3	-	-	-	2	2	-	-	-	-	1	1	-	1	1
CO3	3	2	-	-	-	-	-	1	-	-	-	1	1	1	1	2
CO4	3	2	1	-	-	-	-	-	1	1	-	1	1	1	1	2
CO5	3	2	1	1	-	-	-	-	-	1	-	1	1	1	1	1
CO6	1	1	-	-	-	2	2	-	1	-	-	1	1	1	1	1

24IT201: DATA STRUCTURES AND ALGORITHMS (LAB INTEGRATED)

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Analyze and compare functions using asymptotic analysis and Understand the concepts of basic data structures such as array and linked list.	K4
CO2	Applying a suitable algorithm for searching and sorting.	K3
CO3	Analyze the various tree algorithms for solving real time computing problems.	K3
CO4	Understanding graph algorithms, operations, and applications.	K3
CO5	Understanding the importance of hashing.	K4
CO6	Apply the appropriate data structure in context of solution of given problem	K4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	1	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	2	2	-	-	-	-	-	-	-	-	3	2	-
CO3	3	3	2	2	-	-	-	-	-	-	-	-	3	2	-
CO4	3	2	2	2	-	-	-	-	-	-	-	-	3	3	-
CO5	3	2	2	2	-	-	-	-	-	-	-	-	3	2	-
CO6	2	2	1	1	-	-	-	-	-	-	-	-	3	2	-

DEPARTMENT OF CSBS
24MA203 LINEAR ALGEBRA

COURSE OUTCOMES:

CO's	Course Outcomes	Highest Cognitive Level
Upon completion of the course, the students will be able to:		
CO1	Apply Cramer's rule for solving the system of linear equations.	K1
CO2	Utilize the LU Decomposition technique to solve the system of equations.	K1
CO3	Execute the QR decomposition for a given matrix	K1,K3
CO4	Develop problem-solving abilities through the application of linear algebra techniques	K1,K3
CO5	Determine the eigenvalues and eigenvectors	K5
CO6	Apply matrix techniques in Image Processing and Machine Learning	K4

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	1	-	-	-	-	-	-	-	1	-	-	-
CO2	3	3	1	-	-	-	-	-	-	-	-	1	-	-	-
CO3	3	2	2	2	-	-	-	-	-	-	-	1	-	-	-
CO4	3	2	2	2	-	-	-	-	-	-	-	1	-	-	-
CO5	3	2	1	1	-	-	-	-	-	-	-	1	-	-	-
CO6	3	3	2	1	-	-	-	-	-	-	-	1	-	-	-

24EC201-PRINCIPLES OF ELECTRONICS ENGINEERING

COURSE OUTCOMES:

COs	Course Outcomes	Highest knowledge level
Upon completion of the course, the students will be able to:		
CO1	Examine the performance of electronic circuits using PN junction diode and Zener diode.	K1
CO2	Construct electronic circuits using BJT and to sketch the input and output characteristics.	K2
CO3	Examine the terminal characteristics of FET and MOSFET	K2

CO4	Acquire the knowledge on feedback amplifiers.	K3
CO5	Acquire the knowledge on operational amplifiers.	K3
CO6	Design of simple digital logic circuits.	K4

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	2	1	-	-	-	-	-	-	-	-	-	2	2	3	2	2
CO2	3	2	-	-	1	-	-	2	-	-	-	-	-	2	2	3
CO3	3	2	-	-	-	-	-	2	-	-	1	1	2	3	3	3
CO4	3	2	-	-	1	-	-	2	-	-	-	-	2	2	2	2
CO5	3	2	-	-	1	2	-	-	-	-	1	-	2	2	2	2
CO6	3	2	2	1	1	-	-	2	-	-	-	2	-	3	3	2