



SUPPORTING DOCUMENTS

NAAC AQAR: 2021-22

2.6.1 *Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.*

Attachment:- Supporting Document (COs for all Programmes)



IMS Engineering College, Ghaziabad

Department of Applied Sciences and Humanities

2021-22



IMS Engineering College, Ghaziabad

Course Outcomes (CO)
mapping with
Programme Outcomes
(PO)



Institute Vision and Mission

Vision

Our vision is to impart Vibrant, Innovative and Global Education to make IMS the world leader in terms of Excellence of Education, Research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a Centre of Excellence in Technical and Management Education.
- To inculcate in its students the qualities of Leadership, Professionalism, Executive Competence and Corporate understanding.
- To imbibe and enhance Human Values, Ethics and Morals in our students.
- To transform students into Globally Competitive Professionals



Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



IMS Engineering College, Ghaziabad

B.Tech First Year

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS201T/ KAS202T	Engineering Physics/ Engineering Chemistry	3	1	0	30	20	50		100		150	4
2	KAS203T	Engineering Mathematics-II	3	1	0	30	20	50		100		150	4
3	KEE201T/ KEC201T	Basic Electrical Engineering/ Emerging Domain in Electronics Engineering	3	0	0	30	20	50		100		150	3
4	KCS201T/ KME201T	Programming for Problem Solving / Fundamentals of Mechanical Engineering & Mechatronics	3	0	0	30	20	50		100		150	3
5	KAS251P/ KAS252P	Engineering Physics Lab/ Engineering Chemistry Lab	0	0	2				25		25	50	1
6	KEE251P/ KEC251P	Basic Electrical Engineering Lab/ Electronics Engineering Lab	0	0	2				25		25	50	1
7	KCS251P/ KAS254P	Programming for Problem Solving / English Language Lab	0	1	2				25		25	50	1
8	ECE251P/ KWS251P	Engineering Graphics & Design Lab/ Mechanical Workshop Lab	0	1	2				50		50	100	1
9	KMC201/ KMC202	AI For Engineering/ Emerging Technology for Engineering	2	0	0	15	10	25		25		50	2
10	KNC201	Soft Skill II	2	0	0	15	10	25		25			
	MOOCs	(For B.Tech. Hons. Degree)*											
		Total										900	20



IMS Engineering College, Ghaziabad

Course Outcomes

Course Name: **Engineering Physics**

Semester / Year: Ist / Ist

Faculty name(s): Dr. Pradeep Kumar

Course Code: KAS101T

NBA Code: **101**

Course Outcomes:

Sr. NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C101.1	Apply the concepts of special theory of relativity.	K ₃
C101.2	Apply Maxwell's equations on the propagation mechanism of electromagnetic waves in different medium.	K ₃
C101.3	Apply the elementary concepts of quantum mechanics.	K ₃
C101.4	Apply the concepts of superposition of light waves in terms of interference and diffraction on optical geometries.	K ₃
C101.5	Understand the physics of optical fiber and laser systems and its applications.	K ₂

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
C101.1	3	2	1	2	1	1	1	1	2	2	1	2
C101.2	3	3	1	2	1	1	1	1	1	1	1	2
C101.3	3	2	1	3	3	1	1	1	2	1	1	3
C101.4	3	3	3	2	2	1	1	1	1	1	1	3
C101.5	3	3	2	3	2	1	1	1	1	1	1	3
avrage	3	2.6	1.3	2.4	1.8	1	1	1	1.6	1.2	1	2.6



IMS Engineering College, Ghaziabad

Course Name: **Engineering Chemistry**
 Semester / Year: I/I
 Faculty name(s): Dr Manoj Kumar Singh

Course Code: KAS102T
 NBA Code: **102**

Course Outcomes:

SLNO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1(C102.1)	To understand the basic principles of chemical bonding, Importance of nanomaterials, liquid crystals, graphite & Fullerenes in modern industries	Analyze Level (K 1, K2)
CO2 (C102.2)	Students should be able to understand the basic ideas of UV-Visible, IR and Raman Spectroscopy and their application	Analyze Level (K 3, K4)
CO3 (C102.3)	Graduates shall have an ability to understand the phase rule and their concept. To provide an overview of corrosion and its prevention. Students should know Thermodynamic functions, Batteries	Apply Level (K 2, K3)
CO4 (C102.4)	The course intends to provide in-depth knowledge of water chemistry including various methods of softening. Graduates shall have an ability to know different fuels and their usage.	Analyze Level (K 3, K4)
CO5 (C102.5)	The course intends to provide an overview of various polymers, their synthesis and applications as well as importance of organometallic compounds in polymer industry along with other industries.	Analyze Level (K2, K3)

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
C102.1	3	2	2	1	1	1	1	1	1	1	1	1
C102.2	2	3	3	3	2	2	1	1	1	1	1	1
C102.3	2	2	3	1	2	1	2	1	1	1	1	1
C102.4	3	2	2	2	3	2	2	1	1	1	1	2
C102.5	2	2	2	2	1	1	2	1	1	1	1	1
C102	2.40	2.20	2.20	1.80	1.80	1.20	1.40	1	1	1	1	1.2



IMS Engineering College, Ghaziabad

Course Outcomes

Course Name: **Engineering Mathematics-I**

Course Code: KAS103T

Semester / Year: Ist / Ist

NBA Code: **103**

Faculty name(s): Dr. Mohit Rastogi

Course Outcomes:

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1(C103.1)	Remember the concept of matrices and apply for solving linear simultaneous equations.	K ₁ & K ₃
CO2(C103T2)	Understand the concept of limit, continuity and differentiability and apply in the study of Rolle,s , Lagrange,s and Cauchy mean value theorem and Leibnitz theorems .	K ₂ & K ₃
CO3(C103.3)	Identify the application of partial differentiation and apply for evaluating maxima, minima, series and Jacobians.	K ₃ & K ₅
CO4(C103.4)	Illustrate the working methods of multiple integral and apply for finding area, volume, centre of mass and centre of gravity.	K ₂ & K ₃
CO5(C103.5)	Remember the concept of vector and apply for directional derivatives, tangent and normal planes. Also evaluate line, surface and volume integrals.	K ₂ & K ₅

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
C103.1	3	3	2	2	3	1	1	1	1	1	2	3
C103.2	3	2	1	2	1	1	1	1	1	1	1	2
C103.3	3	3	3	3	3	1	1	1	1	1	1	3
C103.4	3	3	2	2	3	1	1	1	1	1	1	3
C103.5	3	3	1	3	2	1	1	1	1	1	1	3
Avg.	3.00	2.80	1.80	2.40	2.40	1	1	1	1	1	1.2	2.80



IMS Engineering College, Ghaziabad

Course Name: **Basic Electric Engineering**

Course Code: KEE101T

Semester / Year: Ist / 1st

NBA Code: **104**

Faculty name(s): Dr. Chandan Choubey

Course Outcomes:

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1(C104.1)	Apply the concepts of KVL/KCL and network theorems in solving DC circuits.	K3
CO2(C104.2)	Analyze the steady state behavior of single phase and three phase AC electrical circuits.	K4
CO3(C104.3)	Identify the application areas of a single phase two winding transformer as well as an auto transformer and calculate their efficiency. Also identify the connections of a three phase transformer.	K3
CO4(C104.4)	Illustrate the working principles of induction motor, synchronous machine as well as DC machine and employ them in different area of applications.	K3
CO5(C104.5)	Describe the components of low voltage electrical installations and perform elementary calculations for energy consumption.	K3

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2
C104.1	3	2	2	2	3	1	1	2	2	1	2	2	3	3
C104.2	3	3	3	3	3	1	1	2	2	1	2	2	2	2
C104.3	3	3	3	3	3	1	1	2	2	1	2	2	3	2
C104.4	3	3	3	3	2	1	1	2	2	1	2	2	2	2
C104.5	3	3	3	3	2	1	1	2	2	1	2	2	3	2
C104	3.00	2.80	2.80	2.80	2.60	1.00	1.00	2.00	2.00	1.00	2.00	2.00	2.60	2.20



IMS Engineering College, Ghaziabad

Course Name: **ED in Electronics Engg.**

Course Code: KEC-101T

Semester / Year: 1st/1st

NBA Code: **105**

Faculty name(s): Dr. Neeraj Jain

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1(C105.1)	Students should able to identify schematic symbols and understand the working principles of various types of Diodes, and applications of diode like Clamper, clipper and voltage multiplier and rectifier.	K2
CO2 (C105.2)	Understanding the working principle of BJT and FET and their applications as amplifier and switches.	K2
CO3(C105.3)	Graduate should have basic understanding of the block diagram of op-amp and apply to applications such as adder, sub tractor, integrator, differentiator, comparator and amplifier. Basic concept of IoT System like Microprocessor, Microcontroller, Bluetooth Technology, Wi-Fi Technology.	K2, K3
CO4(C105.4)	Analyzeand apply the concept of Number system and various Gates, Concept of Boolean Algebra and use of K-map. Understanding about various IC Technology like SSI, MSI,VLSI Integrated Circuits.	K3, K4
CO5(C105.5)	Understanding about communication systems, need of modulation, fundamentals of Amplitude modulation and demodulation techniques, concept of Data Communication, Wireless communication(GPRS,CDMA,GSM) Radar and Satellite Communication.	K2

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1(C105.1)	3	2	2	1	1	1	1	1	1	1	2	3
CO2 (C105.2)	3	2	2	1	1	1	1	1	1	1	2	3
CO3(C105.3)	3	2	3	3	2	2	2	1	1	1	2	3
CO4(C105.4)	3	3	2	2	2	1	1	1	2	1	2	3
CO5(C105.5)	3	3	3	3	2	2	2	1	1	1	2	3
Average	3	2.40	2.40	2	1.60	1.40	1.40	1	1.2	1	2	3



IMS Engineering College, Ghaziabad

Course Name: **Programming for Problem Solving** Course Code: KCS-101T

Semester / Year: 1st / 2nd

NBA Code: **106**

Faculty name(s): Mr. Manish Kumar Singh

Course Outcomes:

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1(C106.1)	To develop simple algorithms for arithmetic and logical problems.	K3, K4
CO2(C106.2)	To translate the algorithms to programs & execution (in C language).	K3, K2
CO3(C106.3)	To implement conditional branching, iteration and recursion.	K6, K4
CO4(C106.4)	To decompose a problem into functions and synthesize a complete program using divide and conquer approach.	K1, K5
CO5(C106.5)	To use arrays, pointers and structures to develop algorithms and programs.	K3, K4

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
C106.1	3	2	2	2	2	1	1	2	1	1	2	2
C106.2	3	3	3	3	2	1	1	2	2	1	2	2
C106.3	3	2	3	3	3	1	1	2	2	3	2	2
C106.4	2	3	3	3	3	2	1	2	2	1	2	2
C106.5	2	2	3	2	2	1	1	2	2	1	2	3
C106	2.6	2.4	2.8	2.6	2.4	1.2	1	2	1.8	1.4	2	2.2



IMS Engineering College, Ghaziabad

Course Name: **FMEM**

CourseCode: KME101T/201T

Semester / Year: I/I

NBA Code: **107**

Faculty name(s): Dr. Subhash Mishra

Course Outcomes:

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1 (CO107.1)	Understand the concept of stress and strain, factor of safety, beams	K2
CO2 (CO107.2)	Understand the basic component and working of internal combustion engines, electric and hybrid vehicles, refrigerator and heat pump, air conditioning.	K2
CO3 (CO107.3)	Understand fluid properties, conservation laws, hydraulic machinery used in real life.	K2
CO4 (CO107.4)	Understand the working principle of different measuring instrument with the knowledge of accuracy, error and calibration, limit, fit, tolerance and control system.	K2
CO5 (CO107.5)	Understand concept of mechatronics with their advantages, scope and Industrial application, the different types of mechanical actuation system, the different types of hydraulic and pneumatic systems.	K2
CO6 (CO107.6)	Apply concepts of strength of material for safe design, refrigeration forcalculation of COP, concepts of fluid mechanics in real life, concepts of measurements in production systems.	K2

CO-PO- Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO107.1	3	3	3	2	1	2	1	1	3	3	1	3
CO107.2	3	3	2	2	1	3	3	1	3	3	1	3
CO107.3	3	3	3	2	1	2	2	1	2	2	1	3
CO107.4	3	2	1	1	2	3	1		2	1	1	3
CO107.5	3	1	1	1	2	2	1		2	1		3
CO107.6	3	3	3	3	2	2	1		2	2	2	3
Avg.	3.00	2.50	2.17	1.83	1.50	2.33	1.50	1.00	2.33	2.00	1.20	3.00



IMS Engineering College, Ghaziabad

Course Name: **Soft Skills-I**

Course Code: KNC-101

Semester / Year: I/I

NBA Code: **110**

Faculty name(s): Dr. Milan Chakraborty

Course Outcomes:

Sl. No.	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C110.1	Students will be enabled to understand the correct usage of grammar .	K1&K5
C110.2	Students will apply the fundamental inputs of Communication skills in making Speech delivery, individual conference and group communications.	K2&K3
C110.3	Students will evaluate the impact of Interpersonal communication on their performance as a professional and in obtaining professional excellence at the work place.	K2&K5
C110.4	Skills and Techniques of Persuasions and Negotiation would enhance the level of students at multifarious administrative and managerial platforms .	K3&K5
C110.5	Students will be able to equip with Basics of Communication skills and will apply it for practical and oral purposes by being honed up in presentation skills and voice dynamics .	K3&K4

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C110.1	3	1	1	1	1	2	1	1	1	3	1	3
C110.2	3	1	1	1	1	2	1	2	3	3	2	2
C110.3	1	1	1	1	1	1	1	1	1	3	3	3
C110.4	1	1	1	1	1	1	1	1	3	1	2	1
C110.5	3	1	1	1	1	2	1	1	2	3	3	2
C110/Average	2.2	1	1	1	1	1.6	1	1.2	2	2.6	2.2	2.2



IMS Engineering College, Ghaziabad

Course Name: **Engineering Mathematics-II**

Course Code: KAS203T

Semester / Year: IInd / Ist

NBA Code: 111

Faculty name(s): Dr. Mohit Rastogi

Course Outcomes:

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C111.1	Understand the concept of differentiation and apply for solving differential equations.	K ₂ & K ₃
C111.2	Remember the concept of definite integral and apply for evaluating surface areas and volumes.	K ₁ , K ₃ & K ₅
C111.3	Understand the concept of convergence of sequence and series. Also evaluate Fourier Series.	K ₂ & K ₅
C111.4	Illustrate the working methods of complex functions and apply for finding analytic functions.	K ₃
C111.5	Apply the complex functions for finding Taylor's series, Laurent's series and evaluation of definite integrals.	K ₃ & K ₅

*Knowledge Level as per Bloom Taxonomy:

K₁- Remember; K₂- Understand; K₃- Apply; K₄- Analyse; K₅- Evaluate

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C11 1.1	3	3	2	2	3	1	1	1	1	1	2	3
C11 1.2	3	1	1	1	2	1	1	1	1	1	1	2
C11 1.3	3	2	2	3	3	1	1	1	1	1	1	2
C11 1.4	3	3	2	2	3	1	1	1	1	1	1	2
C11 1.5	3	2	3	2	3	1	1	1	1	1	1	3
Average	3.00	2.20	2.00	2.00	2.80	1	1	1	1	1	1.2	2.20



IMS Engineering College, Ghaziabad

Course Name: **Soft Skills-II**

Course Code: KNC-201

Semester / Year: II/I

NBA Code: **112**

Faculty name(s): Dr. Milan Chakraborty

Course Outcomes:

Sl. No.	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C112.1	Students will be able to converse well with effective LSRW skills in English.	K1&K2
C112.2	Students will evaluate the importance of conversation in their personal and professional domain and apply it for extending their professional frontiers.	K3&K5
C112.3	Students will learn to apply motivation skills for their individual and professional excellence.	K2&K3
C112.4	Students will utilize their teamwork and their interpersonal communication skills to survive and excel at their work-place.	K2,K3&K5
C112.5	Students will learn to evaluate creativity for their professional innovation and critical thinking for their competence.	K4&K5

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C112.1	3	1	1	1	1	2	1	1	3	3	3	3
C112.2	3	1	1	1	1	2	1	1	3	3	2	3
C112.3	1	1	1	1	1	2	1	1	3	3	2	3
C112.4	3	2	1	3	1	3	1	1	3	3	2	2
C112.5	1	1	1	1	1	1	1	1	1	1	1	1
C112/A v.	2.2	1.2	1	1.4	1	2	1	1	2.6	2.6	2	2.4



IMS Engineering College, Ghaziabad

Course Outcomes

Course Name: Engineering Physics Lab
Semester / Year: Ist / Ist
Faculty name(s): Dr. Pradeep Kumar

Course Code: KAS151P
NBA Code: 151

Course Outcomes:

Sr. NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1	Establish the correlation between electricity and magnetism.	K2
CO2	Identify the electrical, electronic and thermal properties of material.	K2
CO3	Analyze different phenomena of light.	K4

CO	CO'S	EXPERIMENTS
C151.1	Establish the correlation between electricity and magnetism.	<ol style="list-style-type: none">1. To study the variation of magnetic field along the axis of current carrying - circular coil and then to estimate the radius of the coil.2. To draw the b-h curve of given sample.3. To study the Hall Effect and determine hall coefficient, carrier density and - mobility of a given semiconductor using Hall Effect set up.
C151.2	Identify the electrical, electronic and thermal properties of material.	<ol style="list-style-type: none">1. To determine the V-I characteristics of P-N Junction diode.2. To verify Stefan's Law by electrical method.3. To determine the ballistic constant of a ballistic galvanometer.4. To measure high resistance by leakage method by using ballistic galvanometer.



IMS Engineering College, Ghaziabad

C151.3	Analyze different phenomena of light.	<ol style="list-style-type: none">1. To determine the wavelength of monochromatic light by Newton's ring.2. To determine the wavelength of spectral lines using plane transmission grating.3. To determine the focal length of two lenses by nodal slide and locate the position of cardinal points.4. Measurement of fiber attenuation and aperture of fiber.5. To determine the wavelength of sodium light with the help of Fresnel's biprism.6. To study the polarization of light using He-Ne laser light.
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CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
C151.1	3	3	1	2	1	1	1	3	3	2	1	3
C151.2	3	3	1	3	2	1	1	3	2	2	1	3
C151.3	2	3	1	2	1	2	2	2	2	2	1	3
Average	2.66	3	1	2.33	1.33	1.33	1.33	2.66	2.33	2	1	3



IMS Engineering College, Ghaziabad

Course Name: Engineering Chemistry Lab

Course Code: KAS152P

Semester / Year: I/I

NBA Code: 152

Faculty name(s): Dr. M. K. Singh

Course Outcomes:

SLNO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1(C152.1)	Use of different analytical instruments.	K2,K4
CO2 (C152.2)	Measure molecular/system properties such as surface tension, viscosity.	K1,K3
CO3 (C152.3)	Measure, conductance of solution, chloride and iron content in water. hardness of water	K3,K4
CO4 (C152.4)	Estimate the rate constant of reaction.	K1,K2

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
C152.1	2	2	1	2	2	1	1	2	2	2	2	3
C152.2	3	2	1	2	2	1	1	1	2	2	1	2
C152.3	3	2	2	2	2	3	3	3	2	2	2	3
C152.4	2	2	1	2	2	1	1	1	2	1	1	2
C152	2.5	2	1.25	2	2	1.5	1.5	1.75	2	1.75	1.5	2.5



IMS Engineering College, Ghaziabad

Course Name: Basic Electrical Engineering Lab Course Code: KEE151P

Semester / Year: 1st / 1st

NBA Code: 153

Faculty name(s): Dr. Chandan Chaubey

Sl. NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C153.1	Conduct experiments illustrating the application of KVL/KCL and network theorems to DC Electrical circuits.	K4
C153.2	Demonstrate the behavior of AC circuits connected to single phase AC supply and measure power in single phase as well as three phase electrical circuits.	K4
C153.3	Perform experiment illustrating BH curve of magnetic materials.	K3
C153.4	Calculate efficiency of a single phase transformer and DC machine.	K4
C153.5	Perform experiments on speed measurement and reversal of direction of three phase induction motor and Identify the type of DC and AC machines based on their construction.	K3

KL- Bloom's Knowledge Level (K₁, K₂, K₃, K₄, K₅, K₆)

K₁-Remember, K₂- Understand, K₃- Apply, K₄- Analyze, K₅- Evaluate, K₆- Create

CO-PO Mapping:

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C153.1	3	2	2	2	3	1	1	2	2	1	1	1
C153.2	3	3	3	3	3	1	1	1	2	1	1	1
C153.3	3	3	3	3	3	1	1	1	1	1	1	1
C153.4	3	3	3	3	2	1	1	1	1	1	1	1
C153.5	3	3	3	3	2	1	1	1	1	1	1	1
C153	3.00	3.00	2.8	2.8	2.6	1.00	1.00	1.2	1.4	1.00	1.00	1.00



IMS Engineering College, Ghaziabad

Course Name: B.Tech.

Course Code: KEC-151P

Semester / Year: 1st / 1st

NBA Code: 154

Faculty name(s): Dr. Neeraj Jain

Course Outcomes:

S.NO.	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C154.1	Implement Transformer winding and Printed circuit Boards.	K3, K4
C154.2	Study of various electronic equipments like CRO, Multi-meter, Function Generator and power supply.	K1, K2
C154.3	Implement various applications of diode as HWR, FWR and learn VI curve of the same.	K3, K4
C154.4	Design various digital circuits using logic gates.	K3, K4
C154.5	Implement various op-amp applications like adder and subtractor.	K3, K4

KL- Bloom's Knowledge Level (K₁, K₂, K₃, K₄, K₅, K₆)

K₁-Remember, K₂- Understand, K₃- Apply, K₄- Analyze, K₅- Evaluate, K₆- Create

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C154.1	3	2	2	1	1	1	1	1	1	1	2	3
C154.2	3	2	2	2	1	1	1	1	1	1	2	3
C154.3	3	2	3	1	1	1	1	1	1	1	1	3
C154.4	3	2	1	1	1	1	1	1	1	1	1	3
C154.5	3	2	2	2	1	1	1	1	1	1	1	3
Average	3	2	2	1.40	1	1	1	1	1	1	1.40	3



IMS Engineering College, Ghaziabad

Course Name: Programming for Problem Solving Course Code: KCS-151P

Semester / Year: 1st / 2nd

NBA Code:155

Faculty name(s): Mr. Manish Kumar Singh

Course Outcomes:

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
CO1(155.1)	Able to implement the algorithms and draw flowcharts for solving Mathematical and Engineering problems.	K3, K4
CO2(155.2)	Demonstrate an understanding of computer programming language concepts.	K3, K2
CO3(155.3)	Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.	K6, K4
CO4(155.4)	Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures.	K1, K5
CO5(155.5)	Develop confidence for self education and ability for life-long learning needed for Computer language.	K3, K4

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
155.1	3	3	2	2	1	1	1	2	1	1	2	2
155.2	3	3	2	1	1	1	1	2	2	2	2	2
155.3	3	3	2	1	1	1	1	1	2	3	3	2
155.4	3	3	2	1	1	1	1	2	2	1	2	2
155.5	3	3	3	1	1	1	1	2	2	3	2	3
155	3	3	2.2	1.2	1	1	1	1.8	1.8	2	2.2	2.2



IMS Engineering College, Ghaziabad

Course Name: English Language Lab

Course Code: KAS-154P

Semester / Year: I/I

NBA Code: 156

Faculty name(s): Dr. Arvind Kumar Sharma

Course Outcomes:

Sl. No.	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C156.1	To facilitate software based learning to provide the required English Language proficiency to students.	K1& K2
C156.2	To acquaint students with specific dimensions of communication skills i.e. Reading, Writing, Listening, Thinking and Speaking.	K4 & K5
C156.3	To train students to use the correct and error-free writing by being well versed in rules of English grammar.	K3 & K4
C156.4	To cultivate relevant technical style of communication and presentation at their work place and also for academic uses.	K3 & K5
C156.5	To enable students to apply it for practical and oral presentation purposes by being honed up in presentation skills and voice-dynamics.	K2 & K5

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C156.1	3	1	1	1	1	2	1	1	1	3	1	1		
C156.2	3	1	1	1	1	1	1	1	1	3	1	1		
C156.3	2	1	1	1	1	2	1	1	3	3	2	1		
C156.4	2	3	1	2	1	2	1	1	3	3	2	3		
C156.5	1	2	1	1	1	2	1	1	2	3	2	2		
C156/ Average	2.2	1.6	1	1.2	1	1.8	1	1	2	3	1.6	1.6		



IMS Engineering College, Ghaziabad

Course Name: Mechanical workshop lab

Course Code: KWS 151P

Semester / Year: I and II

NBA Code: 158

Faculty name(s): Dr V. K. Jain

Course Outcomes:

Sl.NO	DESCRIPTION	COGNITIVE LEVEL (BLOOMS TAXONOMY)
C158.1	Use various engineering materials, tools, machines and measuring equipments	Analyze Level (K3.)
C158.2	Perform machine operations in lathe and CNC machine	Analyze Level (K3.)
C158.3	Perform manufacturing operations on components in fitting and carpentry shop	Apply Level (K3)
C158.4	Perform cutting operations in welding, moulding, casting and gas cutting	Analyze Level (Level no.)
C158.5	Fabricate job by 3D printing manufacturing technique	Analyze Level (K3.)

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C15 8.1	3	2	2	2	2	1	1	1	1	1	1	1
C15 8.2	3	2	2	2	2	1	1	1	1	1	1	1
C15 8.3	3	2	2	2	2	1	1	1	1	1	1	1
C15 8.4	3	2	2	2	2	1	1	1	1	1	1	1
C15 8.5	3	2	2	2	2	1	1	1	1	1	1	1
Average	3	2	2	2	2	1	1	1	1	1	1	1



IMS Engineering College, Ghaziabad

Department of Biotechnology

2021-22



IMS Engineering College, Ghaziabad

Course Outcomes (CO)
mapping with
Programme Outcomes
(PO)
and
Programme Specific
Outcomes (PSO)



Institute Vision and Mission

Vision

Our vision is to impart Vibrant, Innovative and Global Education to make IMS the world leader in terms of Excellence of Education, Research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a Centre of Excellence in Technical and Management Education.
- To inculcate in its students the qualities of Leadership, Professionalism, Executive Competence and Corporate understanding.
- To imbibe and enhance Human Values, Ethics and Morals in our students.
- To transform students into Globally Competitive Professionals



Department Vision and Mission

Vision

To be a Centre of Excellence in field of Biotechnology education, research, training and entrepreneurship guided by sound scientific principles, quality teaching and thrust for improvement

Mission

- To develop a strong Biotechnology Engineering program based on quality education, research and training.
- To impart quality education to the students and enhance their skills which will make them globally competitive.
- To develop trained biotechnology professionals who can contribute to the continuous improvement of biotechnological services and products.
- To develop scientific and/or technical resources as per biotechnology industry demands



Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Program Educational Objectives

1. To prepare biotechnology graduates for a successful technical and professional career as per the needs of the biotechnology industry.
2. To provide students with a strong foundation in scientific, engineering and mathematical fundamentals necessary to design, analyze and solve technical problems in the biotechnology industry.
3. To inculcate professional and ethical attributes in the students and to promote lifelong learning of attributes related to biotechnology.
4. To encourage students to pursue higher education and research.
5. To develop graduates with enhanced technical acumen, aptitude, communication and professional skills.

Program Specific Outcomes (PSO)

1. Graduate shall have the ability to apply fundamental knowledge of mathematics, biology, biological processes, and the scientific method to solve problems in biotechnology.
2. Graduate shall have the ability to integrate biological knowledge and concepts with the ethical and industrial perspectives of biotechnology and life sciences.
3. Graduate shall have the ability to work in groups or individually to develop written and oral presentations skills for effective communication of scientific concepts. Students are expected to engage in independent and lifelong learning in the context of biotechnological advancements.
4. Graduate shall have the ability to apply major quantitative and computational skills and tools to solve problems in the biotechnology industry.



IMS Engineering College, Ghaziabad

B.TECH (BIOTECHNOLOGY)

SEMESTER- III

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit	
			L	T	P	CT	TA	Total	PS	TE	PE			
1	KOE031-38/ KAS304	Engineering Science Course/Maths V	3	1	0	30	20	50			100		150	4
2	KAS301/ KVE 301	Technical Communication/Universal Human values	2	1	0	30	20	50			100		150	3
			3	0	0									
3	KBT301	Techniques in Biotechnology	3	1	0	30	20	50			100		150	4
4	KBT302	Microbiology & Immunology	3	1	0	30	20	50			100		150	4
5	KBT303	Biochemistry	3	0	0	30	20	50			100		150	3
6	KBT351	Techniques in Biotechnology Lab	0	0	2						25	25	50	1
7	KBT352	Microbiology & Immunology Lab	0	0	2						25	25	50	1
8	KBT353	Biochemistry Lab	0	0	2						25	25	50	1
9	KBT354	Mini Project or Internship Assessment*	0	0	2			50					50	1
10	KNC301/ KNC302	Computer System Security/Python Programming	2	0	0	15	10	25			50			0
11		MOOCs (Essential for Hons. Degree)												
		Total											950	22

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.



IMS Engineering College, Ghaziabad

Sub Code	KOE-035
Sub. Name	Data Structures and Algorithms

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to understand and analyze the time and space complexity of an algorithm	K2
CO2	The student should be able to understand and implement fundamental algorithms (including sorting algorithms, graph algorithms, and dynamic programming).	K2
CO3	The student should be able to discuss various algorithm design techniques for developing algorithms.	K2
CO4	The student should be able to discuss various searching, sorting and graph traversal algorithms.	K2
CO5	The student should be able to understand operation on Queue, Priority Queue, D-Queue.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	-	-	-	-	1	1	3
CO2	3	3	3	3	3	-	-	-	-	2	2	3
CO3	3	3	3	3	3	-	-	-	-	1	3	3
CO4	3	3	3	3	3	-	-	-	-	1	3	3
CO5	3	3	3	3	3	-	-	-	-	1	3	3
Avg	3	3	3	2.8	3	-	-	-	-	1.2	2.4	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	-	2	3
CO2	3	-	2	3
CO3	3	-	2	3
CO4	3	-	2	3
CO5	3	-	2	3
Avg	3	-	2	3



IMS Engineering College, Ghaziabad

Sub Code	KAS-301
Sub. Name	Technical Communication

COURSE OUTCOMES		Bloom's Level
CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.	K2
CO2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions	K3
CO3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.	K3
CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence	K6
CO5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2	-	1	2	1	1	3	3	2	1
CO2	1	2	3	-	3	2	-	-	-	3	2	3
CO3	1	2	3	-	3	2	1	2	3	3	2	3
CO4	2	2	3	1	3	3	-	1	3	3	3	3
CO5	1	1	3	1	1	-	3	3	3	3	1	3
Avg	1.2	1.6	2.8	1	2.2	2.25	1.66667	1.75	3	3	2	2.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	-	2	-	3
CO2	-	1	-	3
CO3	2	-	-	3
CO4	1	3	-	3
CO5	-	-	-	1
Avg	1.5	2	-	2.6



IMS Engineering College, Ghaziabad

Sub Code	KBT-301
Sub. Name	Techniques in Biotechnology

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to describe Light microscopy-its types, TEM, SEM and Atomic force microscopy.	K2
CO2	The student should be able to analyze the Principle, Operations and types of Chromatography.	K4
CO3	The student should be able to explain the theory of Electrophoresis, its types and Western Blotting.	K2
CO4	The student should be able to elucidate the General principles of electromagnetic radiation, Types of spectra , UV-VIS spectrophotometer, Atomic absorption and Atomic emission spectroscopy and X-Ray spectroscopy.	K2
CO5	The student should be able to describe NMR, ESR, Circular dichroism (CD) principles, Basics of IR and X-Ray diffraction analysis.	K2
CO6	The student should be able to analyze the bioprinting and biosensor processes	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	2	2	2	1	1	-	-	2
CO2	2	3	2	3	2	2	1	1	2	1	1	2
CO3	3	3	2	2	2	2	2	1	2	1	1	2
CO4	2	3	3	2	3	2	2	1	1	-	-	2
CO5	3	3	2	2	3	2	1	1	1	-	-	2
CO6	2	2	2	2	2	1	2	1	2	-	-	2
Avg	2.5	2.67	2.17	2.33	2.33	1.83	1.67	1	1.5	1	1	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	2
CO2	3	2	2	2
CO3	3	3	2	3
CO4	3	2	2	2
CO5	3	2	2	3
CO6	3	2	2	2
Avg	3	2.17	2	2.33



IMS Engineering College, Ghaziabad

Sub Code	KBT-302
Sub. Name	Microbiology & Immunology

COURSE OUTCOMES		Bloom's Level
CO1	Student should be able to describe the process of isolation, identification of microorganisms and their preservation, physical and chemical control methods for sterilization.	K2
CO2	Student should be able to explain about the bacterial genetic recombination, bacterial photosynthesis and nitrogen fixation, Virus structure and its reproduction cycle	K2
CO3	Student should be able to describe the immunity and its types, major cells and organs of the immune system, different types of antigens & antibodies, production of monoclonal antibody	K2
CO4	Student should be able to describe the structure and function of MHC molecules and its role in process of antigen presentation, cytokines and complement system, ELISA, RIA, Western blotting	K2
CO5	Student should be able to describe the role of microorganism in waste water management, bioremediation and in causing various pathogenic diseases.	K2
CO6	Student should be able to summarize the mechanism of immunity against the infectious diseases, vaccines, hypersensitivity and immunotherapy.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	-	2	2	-	2	-	-	2
CO2	2	2	1	2	-	2	2	-	2	-	-	2
CO3	2	2	1	1	-	1	1	-	2	-	-	2
CO4	3	3	2	1	-	2	1	-	2	-	-	2
CO5	2	2	1	2	-	1		-	2	-	-	1
CO6	2	1	1	1	-	1	1	-	2	-	-	1
Avg	2.33	2.00	1.17	1.50	-	1.50	1.40	-	2.00	-	-	1.67

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	2	2
CO2	3	2	1	1
CO3	2	2	2	-
CO4	3	3	3	3
CO5	2	2	1	1
CO6	1	2	1	1
Avg	2.33	2.33	1.67	1.60



IMS Engineering College, Ghaziabad

Sub Code	KBT-303
Sub. Name	Biochemistry

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to relate the importance of water in biological system and to describe the role of biological buffer.	K5
CO2	The student should be able to describe structure & function of major biomolecules found in cells, that make them indispensable for life.	K2
CO3	The student should be able to explain energy generation through carbohydrate metabolism and related diseases	K2
CO4	The student should be able to describe energy generation through lipid metabolism and related diseases	K2
CO5	The student should be able to explain the metabolic pathways of amino acids and proteins and related diseases	K2
CO6	The student should be able to discuss the role of nucleic acids in various metabolic activities and disorders	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	3	1	-	-	-	2	3	1	3
CO2	2	2	1	2	1	-	-	-	1	3	1	3
CO3	3	3	1	2	1	1	-	-	1	3	1	3
CO4	3	3	1	2	1	1	-	-	1	3	1	3
CO5	2	2	1	2	1	1	-	-	1	3	1	3
CO6	2	2	1	2	1	1	-	-	1	3	1	3
Avg	2.33	2.33	1.00	2.17	1.00	1.00	-	-	1.17	3.00	1.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	2	1
CO2	2	1	2	1
CO3	3	1	2	1
CO4	3	1	2	1
CO5	3	1	2	1
CO6	3	1	2	1
Avg	2.67	1.00	2.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KBT-351
Sub. Name	Techniques in Biotechnology Lab

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to understand precession , accuracy and spectroscopy	K2
CO2	The student should be able to understand and use microscopy and paper chromatography	K2
CO3	The student should be able to understand and perform SDS-PAGE and agarose gel electrophoresis	K2
CO4	The student should be able to understand membrane separation techniques	K2
CO5	The student should be able to liquid-liquid separation experiments	K3
CO6	The student should be able to column chromatography	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	1		3	2	3	2	2	2		2
CO2	2	2	2		2	2	2	2	2	2		2
CO3	2	2	1		2	2	1	2	2	2		2
CO4	2	2	1		2	2	1	2	1	2		2
CO5	2	2	1		1	2	2	2	1			2
CO6	3	1	1		2	2	2	2	1	2		2
Avg	2.17	2.00	1.17		2.00	2.00	1.83	2.00	1.50	2.00		2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2		1
CO2	1	2		1
CO3	1	2		1
CO4	1	2		1
CO5	1	2		1
CO6		1		1
Avg	2.00	1.83		1.00



IMS Engineering College, Ghaziabad

Sub Code	KBT-352
Sub. Name	Microbiology & Immunology Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to apply the principle and application of the equipment and tools used in microbiology laboratory.	K3
CO2	Students should be able to perform various pure culture techniques used for the isolation and purification of microorganisms.	K3
CO3	Students should be able to perform the simple and differential staining for the microscopic identification of microorganism.	K3
CO4	Students should be able to identify the type of blood group using the standard kit method.	K1
CO5	Students will be able to apply the principles and perform the procedure of immunodiffusion.	K3
CO6	Students should be able to measure the concentration of antigen or antibody in serum sample by using immunological assays.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	1	-	3	1	1	1	-	2	1
CO2	1	1	2	1	3	1	-	-	2	1	2	2
CO3	1	1	-	2	-	1	1	-	1	2	-	-
CO4	-	2	1	1	-	1	-	-	-	1	1	2
CO5	1	1	-	2	-	1	1	-	1	2	-	-
CO6	2	-	-	1	-	3	1	1	1	-	2	1
Avg	1.40	1.25	1.50	1.33	3.00	1.67	1.00	1.00	1.20	1.50	1.75	1.50

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	1	1
CO2	2	3	1	2
CO3	2	2	-	1
CO4	2	1	1	1
CO5	2	3	1	2
CO6	3	1	1	1
Avg	2.33	1.83	1.00	1.33



IMS Engineering College, Ghaziabad

Sub Code	KBT-353
Sub. Name	Biochemistry Lab

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to perform quantitative and qualitative analysis of biomolecules.	K3
CO2	The student should be able to do the calculations associated with practical work like dilutions, unit conversions and solutions of different concentrations.	K3
CO3	The student should be able to perform the separation of solutes using chromatographic techniques	K3
CO4	The student should be able to perform molecular analysis of DNA using agarose gel electrophoresis	K3
CO5	The student should be able to design, execute and analyse a biochemistry experiment and make its report.	K6
CO6	The student should be able to perform experiment using safe and good laboratory processes individually or as a team.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	-	-	-	-	2	1	-	1
CO2	2	2	1	1	-	-	-	-	1	-	-	1
CO3	1	1	1	2	1	-	-	-	2	1	-	1
CO4	2	1	2	1	-	-	-	-	2	1	-	1
CO5	2	2	3	2	-	-	-	-	2	1	-	1
CO6	1	1	2	-	-	2	2	-	-	-	-	1
Avg	1.67	1.50	1.67	1.40	1.00	2.00	2.00	-	1.80	1.00	-	1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	3
CO2	3	2	2	2
CO3	3	2	2	1
CO4	3	2	2	1
CO5	3	2	2	1
CO6	2	2	2	1
Avg	2.83	2.00	2.00	1.50



IMS Engineering College, Ghaziabad

SEMESTER-IV													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS404/ KOE041-48	Maths V/Engineering Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS401	Universal Human Values/ Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3	KBT401	Bioprocess Engineering I	3	0	0	30	20	50		100		150	3
4	KBT402	Genetics & Molecular Biology	3	1	0	30	20	50		100		150	4
5	KBT403	Enzyme Engineering	3	1	0	30	20	50		100		150	4
6	KBT451	Bioprocess Engineering I Lab	0	0	2				25		25	50	1
7	KBT452	Genetics & Molecular Biology Lab	0	0	2				25		25	50	1
8	KBT453	Enzyme Engineering Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming/Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											
		Total										900	21



IMS Engineering College, Ghaziabad

Sub Code	KAS-404
Sub. Name	Elementary Mathematics - III

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to understand the concept of Fourier Transform and Z-Transform to apply for solving with the help of transform problems.	K2
CO2	The student should be able to remember the concept of Probability to evaluate Probability distribution.	K1
CO3	The student should be able to analyze the concept of numerical techniques to evaluate the zero's of the function interpolation	K4
CO4	The student should be able to apply the concept of hypothesis to evaluate various hypothesis testing.	K3
CO5	The student should be able to remember the concept of design and statistical quality control to create control charts.	K1

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	1	-	-	-	-	-	-	2
CO2	3	2	3	2	2	-	-	-	-	-	-	2
CO3	3	2	2	-	-	-	-	-	-	-	-	2
CO4	3	2	2	-	-	-	-	-	-	-	-	2
CO5	2	2	1	-	-	-	-	-	-	-	-	1
Avg	2.8	2.2	2.2	2.5	1.5	-	-	-	-	-	-	1.8

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	-	3
CO2	3	-	-	3
CO3	2	-	-	3
CO4	3	-	-	3
CO5	2	1	-	3
Avg	2.6	1	-	3



IMS Engineering College, Ghaziabad

Sub Code	KVE-401
Sub. Name	Universal Human Values

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to realize the importance & need of human values and value education to human being.	K5
CO2	Students should be able to realize the importance of self-exploration in harmony of family.	K5
CO3	They should be able to understand and appreciate role of harmonious family in peaceful society.	K2
CO4	Students who complete this course should be able to investigate his/her self & make it suitable to society and existence.	K4
CO5	Students should be able to apply the ethical and human values in family, society, nature and professional life.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	3	-	-	-	-	-	2
CO2	-	-	-	-	-	3	2	2	-	-	-	-
CO3	-	-	-	-	-	3	2	-	2	-	-	-
CO4	-	-	-	-	-	-	2	2	-	-	-	-
CO5	-	-	-	-	-	-	3	3	-	-	-	2
Avg	-	-	-	-	-	3	2.2	2.2	2	-	-	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	-
CO2	2	2	1	-
CO3	2	1	1	-
CO4	1	1	1	-
CO5	1	1	1	-
Avg	2	1.5	1	-



IMS Engineering College, Ghaziabad

Sub Code	KBT-401
Sub. Name	Bioprocess Engineering I

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to calculate the rate of heat transfer in conduction, convection and radiation through different surfaces	K3
CO2	The student should be able to design and analyze the performance of heat exchangers and evaporators.	K4, K6
CO3	The student should be able to identify and analyse the mechanism of diffusional mass transfer.	K4
CO4	The student should be able to understand the basic fluid properties, flow forces, and flow regime	K2
CO5	The student should be able to understand the basic concepts of manometer, venturimeter, orifice meter	K2
CO6	the student should be able to understand the working of reciprocal and centrifugal pumps	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	-	-	-	-	-	-	-	2
CO2	3	3	3	2	2	-	-	-	-	-	-	1
CO3	3	3	3	2	2	-	-	-	-	-	-	1
CO4	3	1	2	1	1	-	-	-	1	-	1	1
CO5	3	3	3	3	3	-	-	-	1	-	1	1
CO6	3	3	2	3	2	-	-	-	1	-	1	1
Avg	3.00	2.67	2.67	2.17	2.00	-	-	-	1.00	-	1.00	1.17

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	2
CO2	3	2	1	2
CO3	3	2	1	2
CO4	3	2	1	-
CO5	3	2	1	-
CO6	2	1	2	-
Avg	2.83	1.83	1.20	2.00



IMS Engineering College, Ghaziabad

Sub Code	KBT-402
Sub. Name	Genetics and Molecular Biology

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to discuss the basics of heredity and variation.	K2
CO2	The student should be able to illustrate the organization of genome.	K3
CO3	The student should be able to describe the linkage, recombination and two-point and three-point test crosses.	K2
CO4	The student should be able to analyze the mechanism of DNA replication, transcription and translation processes taking place in eukaryotes and prokaryotes.	K4
CO5	The student should be able to distinguish the various checkpoints in cell cycle which prevent cancer and understand its regulation along with apoptosis.	K4
CO6	The student should be able to illustrate the Gene cloning and r-DNA technology along with its industrial applications.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2				2	1	2	1	2	1	2	2
CO2	2	1		3	1	2	2	2	2	2	3	1
CO3	1	2	2		2	3	2	2	3	2	2	2
CO4	2	2		3	2	2	1	2	1	3	2	1
CO5	2	3	2	1	3	2	3	3	2	2	1	2
CO6	2	2			1	1	2	1	3	1	1	2
Avg	1.83	2.00	2.00	2.33	1.83	1.83	2.00	1.83	2.17	1.83	1.83	1.67

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	1
CO2	3	1	2	1
CO3	2	1	3	2
CO4	2	2	1	2
CO5	3	1	2	2
CO6	2	3	2	1
Avg	2.50	1.67	2.00	1.50



IMS Engineering College, Ghaziabad

Sub Code	KBT-403
Sub. Name	Enzyme Engineering

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to describe structure, function, activity and kinetics of enzymes.	K2
CO2	The student should be able to describe the various factors and modes of enzyme inhibition and regulation and incorporate them in industrial applications.	K2
CO3	The student should be able to summarize processes involved in extraction and purification of enzymes and develop enzyme assays for research and industry.	K2
CO4	The student should be able to describe and apply enzymes immobilization techniques.	K2
CO5	The student should be able to discuss and assemble biosensors important to industries, healthcare and environment.	K2
CO6	The student should be able to discuss and design different types of bioreactors using immobilized enzymes.	K2, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	3	1	-	-	-	1	3	-	2
CO2	3	3	2	3	1	-	-	-	1	3	-	2
CO3	3	3	2	3	3	1	1	1	3	3	2	3
CO4	3	3	2	3	3	1	1	-	3	3	2	3
CO5	3	3	3	3	3	2	2	1	3	3	2	3
CO6	3	3	3	3	3	1	1	-	3	3	2	3
Avg	2.83	2.83	2.33	3.00	2.33	1.25	1.25	1.00	2.33	3.00	2.00	2.67

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	-	3	2
CO2	3	-	3	2
CO3	3	2	3	2
CO4	3	2	3	2
CO5	3	2	3	2
CO6	3	2	3	2
Avg	3.00	2.00	3.00	2.00



IMS Engineering College, Ghaziabad

Sub Code	KBT-451
Sub. Name	Bioprocess Engineering I (Lab)

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to perform an experiment to calculate the thermal conductivity metal rod	K3
CO2	The student should be able to perform an experiment of heat exchangers to understand the concept of heat transfer	K3
CO3	The student should be able to perform an experiment dealing thermal conductivity of insulating powder	K3
CO4	The student should be able to perform an experiment using venturimeter and manometer to understand the pressure drop concept in pipes	K3
CO5	The student should be able to understand an experimental approach for the calculation of surface tension of fluids	K2
CO6	The student should be able to understand velocity profile of fluid through Pitot Tube	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	-	-	-	-	-	-	-	2
CO2	3	2	3	3	1	-	-	-	-	-	-	1
CO3	3	2	2	2	2	-	-	-	-	-	-	1
CO4	3	2	2	-	1	-	-	-	1	-	1	1
CO5	3	2	3	3	2	-	-	-	1	-	1	1
CO6	2	2	2	3	2	-	-	-	1	-	1	1
Avg	2.83	2.00	2.33	2.80	1.60	-	-	-	1.00	-	1.00	1.17

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	2
CO2	3	1	1	2
CO3	3	2	1	2
CO4	3	1	1	1
CO5	3	2	1	-
CO6	2	2	2	1
Avg	2.83	1.67	1.20	1.60



IMS Engineering College, Ghaziabad

Sub Code	KBT-452
Sub. Name	Genetics and Molecular Biology Lab

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to understand basic genetics principles and real life implementation	K2
CO2	The student should be able to comprehend DNA and its components	K2
CO3	The student should be able to correlate with genomic composition in an organism	K5
CO4	The student should be able to understand isolation of DNA and its visualization	K2
CO5	The student should be able to perform and manage DNA experiments	K3
CO6	The student should be able to design experiments related to DNA	K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2	2	3	2	1	1	-	-	-	1
CO2	2	3	2	2	3	2	-	1	2	2	1	1
CO3	2	2	2	2	3	-	3	1	-	-	2	1
CO4	3	3	2	2	3	-	2	1	2	3	1	1
CO5	2	3	2	2	3	3	-	3	3	1	2	1
CO6	3	1	1	1	1	-	-	3	-	-	-	3
Avg	2.17	2.33	1.83	1.83	2.67	2.33	2.00	1.67	2.33	2.00	1.50	1.33

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	3	2	1
CO2	2	3	3	1
CO3	2	3	3	1
CO4	2	3	3	1
CO5	2	3	3	1
CO6	1	3	3	1
Avg	1.83	3.00	2.83	1.00



IMS Engineering College, Ghaziabad

Sub Code	KBT-453
Sub. Name	Enzyme Engineering Lab

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to extract enzyme from plant and microbial source	K3
CO2	The student should be able to perform partial purification methods and quantification of enzyme	K3
CO3	The student should be able to demonstrate effect of temperature on enzyme activity	K2
CO4	The student should be able to demonstrate effect of pH and time on enzyme activity	K2
CO5	The student should be able to demonstrate effect of substrate and enzyme concentration on enzyme activity	K2
CO6	The student should be able to describe methods of immobilization of enzymes	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	2	-	-	-	3	1	-	-
CO2	1	1	1	3	3	-	-	-	3	2	1	1
CO3	2	2	1	3	3	-	-	-	3	2	1	1
CO4	2	2	1	3	3	-	-	-	3	2	1	1
CO5	2	2	1	3	3	-	-	-	3	2	1	1
CO6	1	1	1	3	3	-	-	-	3	2	1	2
Avg	1.60	1.60	1.00	3.00	2.83	-	-	-	3.00	1.83	1.00	1.20

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	-	1	3	-
CO2	1	1	3	1
CO3	2	1	3	1
CO4	2	1	3	1
CO5	2	1	3	1
CO6	1	1	3	1
Avg	1.60	1.00	3.00	1.00



IMS Engineering College, Ghaziabad

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW
B.TECH III YEAR V SEMESTER BIOTECHNOLOGY

SEMESTER- V														SESSION2020-21	
Sl No	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Cre dit		
			L	T	P	CT	TA	Total	PS	TE	PE				
1	KBT 501	Genetic Engineering	3	1	0	30	20	50		100		150	4		
2	KBT 502	Fermentation Biotechnology	3	1	0	30	20	50		100		150	4		
3	KBT 503	Bioinformatics I	3	1	0	30	20	50		100		150	4		
4	KBT 051-054	Departmental Elective-I	3	0	0	30	20	50		100		150	3		
5	KBT 055-058	Departmental Elective-II	3	0	0	30	20	50		100		150	3		
6	KBT 551	Genetic Engineering lab	0	0	2				25		25	50	1		
7	KBT 552	Fermentation Technology Lab	0	0	2				25		25	50	1		
8	KBT 553	Bioinformatics- I virtual lab	0	0	2				25		25	50	1		
9		Mini Project or Internship Assessment*	0	0	2				50			50	1		
10	KNC501/ KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50					
11		MOOCs (Essential for Hons. Degree)													
		Total	17	3	8							950	22		

*The Mini Project or internship (4 weeks) conducted during summer break after IV semester and will be assessed during V semester.



IMS Engineering College, Ghaziabad

Sub Code	KBT-501
Sub. Name	Genetic Engineering

COURSE OUTCOMES		Bloom's Level
CO1	To be able to appraise proper use of host and vector for gene cloning	K3
CO2	Identification of appropriate method for DNA delivery into the host	K4
CO3	Use of gene library for screening of desired sequence/protein	K3
CO4	Cloning process of whole organism and applications	K3
CO5	Process of recombinant protein expression, cell signalling and ethical issues related to gene transfer	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2	2	3	-	-	1	-	-	-	1
CO2	2	3	2	2	3	-	-	1	-	-	-	1
CO3	2	3	2	2	3	-	-	1	-	-	-	1
CO4	3	3	2	2	3	-	-	1	-	-	-	1
CO5	2	3	2	2	3	-	-	3	-	-	-	1
Avg	1	2	2	2	3	-	-	1	-	-	-	1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	3	2	1
CO2	2	3	3	1
CO3	2	3	3	1
CO4	2	3	3	1
CO5	2	3	3	1
Avg	2	3	2.8	1



IMS Engineering College, Ghaziabad

Sub Code	KBT-502
Sub. Name	Fermentation Biotechnology

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to understand the concepts and process technologies of fermentation	K2
CO2	Student will be able to learn the application and use of different raw materials and its use in industrial scale production	K1
CO3	Student will be able to understand the regulatory system in the microorganism	K2
CO4	Student will be able to learn the strain improvement technologies and its role in Fermentation	K1
CO5	Student will be able to learn the concepts of the scale up and scale down criteria of fermentation process and production of metabolites	K1

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	1	-	-	-	1	-	-	1
CO2	3	2	2	3	2	-	-	-	-	-	-	1
CO3	3	2	2	3	2	-	-	-	-	-	-	1
CO4	3	2	2	3	2	-	-	-	-	-	-	1
CO5	3	3	3	2	1	-	-	-	1	1	-	1
Avg	3	2.4	2.4	2.6	1.6	-	-	-	1	1	-	1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	1
CO2	3	1	1	1
CO3	3	1	1	1
CO4	3	1	1	1
CO5	3	2	2	1
Avg	3	1.4	1.4	1



IMS Engineering College, Ghaziabad

Sub Code	KBT-503
Sub. Name	Bioinformatics-1

COURSE OUTCOMES		Bloom's Level
CO1	Understand concepts and application of Bioinformatics, types of databases, sequence similarity, sequence patterns and profiles	K2
CO2	Use sequence alignment techniques, database searching, pairwise and multiple sequence alignment using various tools.	K3
CO3	Understand scoring matrices and its types including PAM , BLOSUM series and matrices for nucleic acid and protein sequences.	K2
CO4	Apply phylogeny and its concepts in molecular evolution and different methods of Phylogenetic tree construction	K3
CO5	Understand and apply the protein structure prediction and application of bioinformatics in drug designing	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1	3	1	-	-	-	-	1	1
CO2	1	1	1	1	2	1	-	2	-	-	1	1
CO3	3	3	2	1	2	-	-	-	-	-	1	1
CO4	3	2	2	2	3	-	-	-	-	-	1	1
CO5	2	3	2	2	3	-	-	-	-	-	1	1
Avg	2	2	1.6	1.4	2.6	1	-	2	-	-	1	1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	-	3
CO2	2	2	-	3
CO3	3	-	1	3
CO4	3	-	1	3
CO5	3	-	1	3
Avg	2.6	1.5	1	3



IMS Engineering College, Ghaziabad

Sub Code	KBT-052
Sub. Name	Nano Biotechnology

COURSE OUTCOMES		Bloom's Level
CO1	Explain and demonstrate the basics of nanoscience, nanobiotechnology and its techniques	K2
CO2	Understand the synthesise of metal nanoparticles by chemical process.	K2
CO3	Perform the biological synthesis of metal nanoparticles.	K3
CO4	Estimate the toxicity, antibacterial property of metal nanoparticles.	K5
CO5	Understand the synthesise the carbon nanotubes from carbon source	K2
CO6	Explain the nano characterization tools and techniques	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	-	1	1	-	-	-	-	2
CO2	2	1	2	2	-	1	2	-	-	-	-	2
CO3	2	1	1	1	-	2	1	-	-	-	-	2
CO4	1	1	1	2	-	2	1	-	-	-	-	2
CO5	1	2	2	2	-	1	1	-	-	-	-	2
CO6	1	2	2	2	-	1	2	-	-	-	-	2
Avg	1.5	1.5	1.67	1.83	-	1.33	1.33	-	-	-	-	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	-
CO2	2	2	1	-
CO3	2	2	1	-
CO4	1	1	1	-
CO5	2	1	1	-
CO6	2	1	1	-
Avg	1.83	1.33	1	-



IMS Engineering College, Ghaziabad

Sub Code	KBT053
Sub. Name	Biomedical instrumentation

COURSE OUTCOMES		Bloom's Level
CO1	Explain and demonstrate the instrumentation involved in biomedical.	K2
CO2	Understand the working and application of plethysmography, electrocardiography and pacemakers etc.	K2
CO3	Explain the ultrasonic measurements, biotelemetry and other related instrumentation.	K2
CO4	Applications of Instrumentation for the clinical laboratory.	K3
CO5	Explain the Medical Imaging equipments and electrical safety of medical equipments.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	2	2	-	-	-	1	1	1	1
CO2	3	1	-	3	3	-	-	-	1	1	1	-
CO3	2	2	1	2	3	-	-	-	-	1	1	-
CO4	2	2	1	1	3	-	-	-	-	1	1	1
CO5	3	2	-	1	1	1	-	1	-	1	1	-
Avg	2.40	1.60	1.00	1.80	2.40	1.00	-	1.00	1.00	1.00	1.00	1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	-	1	-
CO2	1	-	-	1
CO3	1	-	1	1
CO4	1	1	-	-
CO5	2	1	1	-
Avg	1.40	1.00	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KBT 055
Sub. Name	Biofuels & Alcohol Technology

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to explain the basic concepts of metabolism and importance of metabolic engineering	K2
CO2	Student will be able to understand the production of metabolites and its regulatory mechanism	K2
CO3	Student will be able to explain the applications, specificity and product inhibition of bioconversion	K2
CO4	Student will be able to understand the concept of regulation of enzyme production and strain improvement	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	-	-	-	-	-	-	-	2
CO2	3	2	3	3	2	-	-	-	-	-	-	1
CO3	3	2	3	3	2	-	-	-	1	1	-	1
CO4	3	2	3	3	2	-	-	-	1	1	-	1
Avg	3	2.25	2.75	3	2	-	-	-	1	1	-	1.25

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	-
CO2	3	1	1	1
CO3	3	1	1	1
CO4	3	1	1	2
Avg	3	1.25	1	1.33



IMS Engineering College, Ghaziabad

Sub Code	KBT-058
Sub. Name	Molecular Modelling and Drug Design

COURSE OUTCOMES		Bloom's Level
CO1	Explain basic concepts and application of molecular modeling and drug development	K2
CO2	Understand the application of molecular dynamics, molecular mechanism and its application in protein folding	K2
CO3	Explain the concept and application of homology modeling	K2
CO4	Apply the knowledge of molecular modeling in drug designing and development	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	-	-	-	-	-	-	1
CO2	3	2	3	3	3	-	-	-	-	-	-	1
CO3	2	3	3	3	3	-	-	-	-	-	-	1
CO4	2	3	2	3	3	-	-	-	-	-	-	1
Avg	2.5	2.75	2.5	2.75	2.75	-	-	-	-	-	-	1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	3
CO2	2	3	1	2
CO3	3	3	2	3
CO4	3	3	1	2
Avg	2.75	3	1.25	2.5



IMS Engineering College, Ghaziabad

Sub Code	KBT-551
Sub. Name	Genetic Engineering Lab

COURSE OUTCOMES		Bloom's Level
CO1	Demonstrate the isolation of genetic material	K2
CO2	Perform experiments relating to cloning, ligation, restriction digestion and transformation, etc	K3
CO3	Demonstrate the southern blotting for identification of desired DNA in a pool DNA sample	K2
CO4	Perform the bacterial cell competent for transformation	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	3	2	-	-	1	2	1	-	2
CO2	2	3	3	3	2	-	-	1	2	1	-	2
CO3	2	3	3	3	2	-	-	1	2	1	-	2
CO4	2	3	3	3	2	-	-	1	2	1	-	2
Avg	2	3	3	3	2	-	-	1	2	1	-	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	2	1
CO2	3	3	2	1
CO3	3	3	2	1
CO4	3	3	3	2
Avg	3	3	2.25	1.25



IMS Engineering College, Ghaziabad

Sub Code	KBT-552
Sub. Name	Fermentation Biotechnology Lab

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to demonstrate the growth pattern of E.coli	K2
CO2	Student will be able to perform experiments related to production of antibiotics, enzymes and acids through fermentation process	K3
CO3	Student will be able to demonstrate the downstream processing of fermentative products	K2
CO4	Student will be able to perform the solid state fermentation and submerged fermentation	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	-	-	-	-	-	-	-	2
CO2	3	2	3	3	2	-	-	-	-	-	-	1
CO3	3	2	2	3	2	-	-	-	1	1	-	1
CO4	3	2	2	2	1	-	-	-	1	1	-	1
Avg	3	2	2.5	2.75	1.66	-	-	-	1	1	-	1.25

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	-
CO2	3	1	1	1
CO3	3	2	1	1
CO4	2	2	2	2
Avg	2.75	1.75	1.33	1.33



IMS Engineering College, Ghaziabad

Sub Code	KBT-553
Sub. Name	Bioinformatics-1 Virtual Lab

COURSE OUTCOMES		Bloom's Level
CO1	Demonstrate the retrieval of sequence data	K2
CO2	Perform experiments related to locating chromosome and gene expression data.	K3
CO3	Demonstrate the data retrieval system of PubMed.	K2
CO4	Perform the ORF finding and retrieval of gene information	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1	2	-	-	1	-	-	1	1
CO2	2	1	2	1	2	-	-	1	-	-	1	1
CO3	1	1	1	1	2	-	-	1	-	-	1	1
CO4	2	1	2	1	2	-	-	1	-	-	1	1
Avg	1.5	1	1.5	1	2	-	-	1	-	-	1	1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	1
CO2	3	-	1	3
CO3	2	-	-	1
CO4	3	-	1	3
Avg	2.5	-	1	2



IMS Engineering College, Ghaziabad

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW
B.TECH III YEAR VI SEMESTER BIOTECHNOLOGY

		SEMESTER-VI							SESSION2020-21				
Sl. No	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KBT-601	Bioprocess Engineering -II	3	1	0	30	20	50		100		150	4
2	KBT-602	Plant Biotechnology	3	1	0	30	20	50		100		150	4
3	KBT-603	Bioinformatics -II	3	1	0	30	20	50		100		150	4
4	KBT-061 To 064	Departmental Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I	3	0	0	30	20	50		100		150	3
6	KBT-651	Bioprocess Engineering -II Lab	0	0	2				25		25	50	1
7	KBT-652	Plant Biotechnology Lab	0	0	2				25		25	50	1
8	KBT-653	Bioinformatics-II Lab	0	0	2				25		25	50	1
9	KNC601/ KNC602	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			
10		MOOCs (Essential for Hons. Degree)											
		Total	0	3	6							900	21



IMS Engineering College, Ghaziabad

Sub Code	KBT-601
Sub. Name	Bioprocess Engineering-II

COURSE OUTCOMES		Bloom's Level
CO1	Understand the kinetics of microbial growth and the associated parameters.	K2
CO2	Utilize sterilization concepts necessary for proper bioreactor operation.	K3
CO3	Discuss the basics of ideal reactor operation.	K2
CO4	Explain the concept and mechanism of mass transfer in bioprocessing.	K2
CO5	Analyze the concept of bioreactor control mechanism and identify suitable control system.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	-	-	-	-	-	-	-	-	2
CO2	3	3	3	-	-	-	-	-	-	-	-	2
CO3	3	3	3	2	2	-	-	-	-	-	-	2
CO4	3	3	3	3	-	-	-	-	-	-	-	1
CO5	3	3	3	3	3	-	-	-	-	-	-	2
Avg	3	3	3	2.67	2.5	-	-	-	-	-	-	1.8

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2
CO2	3	3	-	-
CO3	3	3	2	2
CO4	3	-	-	-
CO5	3	3	2	3
Avg	3	3	2	2.33



IMS Engineering College, Ghaziabad

Sub Code	KBT-602
Sub. Name	Plant Biotechnology

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to understand the principle and basic requirements for plant tissue culture	K2
CO2	Students will be able to explain the difference between tissue and organ culture and their applicability	K2
CO3	Students will be able to understand haploid culture and in vitro selection of mutants.	K2
CO4	Student will be able to analyze somaclonal variation for improved crop varieties in vitro cultures.	K4
CO5	Student will be able to identify suitable cryopreservation and reculture technique for the cultured tissue	K1
CO6	Students will be able to understand the development of transgenic plants through genetic manipulations	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2	2	-	-	2	-	2	-	1	1
CO2	1	2	2	2	1	2	1	-	1	1	1	2
CO3	1	2	2	2	2	1	1	-	2	-	1	1
CO4	1	1	1	1	2	1	1	-	1	-	1	1
CO5	2	2	2	2	2	1	1	-	1	-	-	1
CO6	3	2	2	2	3	1	1	1		1	-	1
Avg	1.50	1.67	1.83	1.83	2.00	1.20	1.17	1.00	1.40	1.00	1.00	1.17

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	3	1	1
CO2	1	2	1	1
CO3	2	2	1	1
CO4	2	2	1	2
CO5	2	1	1	1
CO6	3	2	1	3
Avg	2.00	2.00	1.00	1.50



IMS Engineering College, Ghaziabad

Sub Code	KBT-603
Sub. Name	Bioinformatics-II

COURSE OUTCOMES		Bloom's Level
CO1	Understand the various tools and techniques related to insilico modeling of biomolecules along with methods of drug designing, protein docking	K2
CO2	Analyze problems related to collection and analysis of biological data.	K4
CO3	Develop steady and time dependent solutions along with their limitations	K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	3	-	-	-	-	-	-	1
CO2	3	3	2	3	2	1	-	-	-	-	-	1
CO3	3	3	3	2	3	3	2	1	-	-	-	1
Avg	3	3	2.33	2.33	2.67	2	2	1	-	-	-	1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	3	2	2
CO2	2	2	3	3
CO3	3	3	3	3
Avg	2.33	2.67	2.67	2.67



IMS Engineering College, Ghaziabad

Sub Code	KBT-061
Sub. Name	Animal Biotechnology

COURSE OUTCOMES		Bloom's Level
CO1	Understand basics of animal tissue culture and its importance	K2
CO2	Understand techniques to establish animal cell cultures in vitro as well as different types of reactors and their working	K2
CO3	Learn the strategies involved in developing clones in lab	K1
CO4	Understand the methods of transgene delivery and production of transgenic animals	K2
CO5	Understand the process of stem cell differentiation and their applications with case studies	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	1	2	-	1	1	-	-	-	-	2
CO2	1	-	1	3	-	1	1	1	-	-	-	1
CO3	2	1	2	1	1	2	1	1	1	-	-	2
CO4	2	1	1	-	-	1	2	2	-	-	-	1
CO5	1	-	1	1	-	1	2	1	-	-	-	1
Avg	1.5	1	1.2	1.75	1	1.2	1.4	1.25	1	-	-	1.4

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	1	1
CO2	3	3	2	1
CO3	3	3	2	2
CO4	3	3	2	1
CO5	2	2	2	1
Avg	2.6	2.6	1.8	1.2



IMS Engineering College, Ghaziabad

Sub Code	KBT-063
Sub. Name	Food Biotechnology

COURSE OUTCOMES		Bloom's Level
CO1	Understand importance of microbes and their products in food industry	K2
CO2	Acquire knowledge of types of foods and their production methodologies	K1
CO3	Learn the Hazard Analysis Critical Control Point System (HACCP system) and Predictive Microbiology/Microbial Modelling.	K1

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3	1	-	-	1	1	-	-	1	1	1
CO2	3	2	3	2	2	1	1	1	-	-	1	2
CO3	3	3	2	2	2	-	2	1	1	1	1	3
Avg	2.33	2.66	2.0	1.33	1.33	0.66	1.33	0.66	0.33	0.66	1.0	2.0

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	2
CO2	3	1	-	2
CO3	2	2	1	3
Avg	2.66	1.66	0.66	2.33



IMS Engineering College, Ghaziabad

Sub Code	KOE-069
Sub. Name	Understanding the Human Being Comprehensively – Human Aspirations and its Fulfillment

COURSE OUTCOMES		Bloom's Level
CO1	To help the students having the clarity about human aspirations, goal, activities and purpose of life	K2
CO2	To facilitate the competence to understand the harmony in nature/existence and participation of human being in the nature/existence	K2
CO3	To help the students to develop the understanding of human tradition and its various components.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	1	2	3	2	2	1	-	3
CO2	-	-	1	-	1	-	2	3	1	-	-	2
CO3	-	1	-	-	2	2	2	3	2	1	-	2
Avg	-	1	1	-	1.3	2	2.3	2.6	1.6	1	1	2.3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	-	1	-
CO2	1	1	-	-
CO3	2	1	-	-
Avg	1.6	1.0	1	-



IMS Engineering College, Ghaziabad

Sub Code	KBT-651
Sub. Name	Bioprocess Engineering-II Lab

COURSE OUTCOMES		Bloom's Level
CO1	Analyze the data on growth kinetics of E.coli.	K4
CO2	Discuss the upstream and downstream bioprocessing for citric acid and α - amylase production.	K2
CO3	Analyze the volumetric liquid mass transfer coefficient (KLa) using sodium sulphite method	K4
CO4	Perform immobilization of enzymes and cells.	K3
CO5	Develop computational design for fermentative production of L- lysine	K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	-	-	-	-	-	-	-	3
CO2	3	3	3	3	2	-	-	-	-	-	-	3
CO3	3	3	3	3	2	-	-	-	-	-	-	2
CO4	3	3	3	3	2	-	-	-	-	-	-	2
CO5	3	3	3	3	3	-	-	-	-	-	-	3
Avg	3	3	3	3	2.25	-	-	-	-	-	-	2.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	2
CO2	3	3	2	2
CO3	3	2	2	1
CO4	3	2	2	1
CO5	3	3	2	3
Avg	3	2.4	2	1.8



IMS Engineering College, Ghaziabad

Sub Code	RBT-652
Sub. Name	Plant Biotechnology Lab

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to operate and handle the plant biotechnology lab equipments.	K3
CO2	The student should be able to perform tissue culture media preparation, sterilization and explants selection.	K3
CO3	The student should be able to understand in vitro cultures through axillary bud induction	K2
CO4	The student should be able to analyze plant secondary metabolites from selected medicinal plants.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	3	2	2	1	1	-	3	2	1	1
CO2	2	3	3	2	1	1	-	-	-	-	-	1
CO3	2	2	3	1	2	1	1	-	-	-	-	1
CO4	2	2	3	3	3	1	-	-	-	-	-	1
Avg	1.75	2.25	3.00	2.00	2.00	1.00	1.00	-	3.00	2.00	1.00	1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	2	1
CO2	2	1	2	1
CO3	2	2	3	1
CO4	2	2	2	1
Avg	2.00	1.75	2.25	1.00



IMS Engineering College, Ghaziabad

Sub Code	RBT-653
Sub. Name	Bioinformatics-II Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basic software and tools used in structure prediction of biomolecules	K2
CO2	Conduct experimental procedure for Ramachandran plot and its analysis	K3
CO3	Construct and analyse of restriction maps, QSAR model and homology model	K4
CO4	Identify and structurally modify a natural product, to design a compound with the desired properties and to assess its therapeutic effects, theoretically.	K1, K6
CO5	Enhance their practical knowledge and thus their employability	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	3	-	-	-	-	-	-	1
CO2	3	3	3	3	3	-	-	-	-	-	-	1
CO3	3	3	3	3	3	1	1	1	-	-	-	1
CO4	3	3	3	3	3	3	1	1	-	-	-	1
CO5	3	3	3	2	3	1	1	-	-	-	-	1
Avg	3.00	3.00	2.80	2.60	3.00	1.67	1.00	1.00	-	-	-	1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	-	3
CO2	3	1	-	3
CO3	3	1	-	3
CO4	3	2	-	3
CO5	3	1	-	3
Avg	3.00	1.20	-	3.00



SEMESTER- VII													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KHU701/ KHU702	HSMC-1 */ HSMC-2 *	3	0	0	30	20	50			100	150	3
2	KBT-071-074	Departmental Elective-IV	3	0	0	30	20	50			100	150	3
3	KBT-075-078	Departmental Elective-V	3	0	0	30	20	50			100	150	3
4		Open Elective-II	3	0	0	30	20	50			100	150	3
5	KBT751X	LAB-1	0	0	2				25		25	50	1
6	KBT752	Mini Project or Internship Assessment*	0	0	2				50			50	1
7	KBT753	Project I	0	0	8				150			150	4
8		MOOCs (Essential for Hons. Degree)											
		Total	12	0	12							850	18

*The Mini Project or internship (4 - 6 weeks) conducted during summer break after VI semester and will be assessed during VII semester.

DEPARTMENTAL ELECTIVE- IV

KBT071: Genomics and Proteomics

KBT072: Bioseparation and Downstream Processing

KBT073: Environmental Biotechnology

KBT074: Industrial Biotechnology

DEPARTMENTAL ELECTIVE- V

KBT075: Biosafety, Bioethics, IPR & Patents

KBT076: Quality Control and Regulatory affairs

KBT077: Biomaterials

KBT078: Biostatistics & design of experiments

LAB (DEPARTMENTAL ELECTIVE)

KBT751A: Genomics and Proteomic Lab

KBT751B: Bioseparation and Downstream Processing

KBT751C: Environmental Biotechnology Lab

KBT751D: Industrial Biotechnology Lab



IMS Engineering College, Ghaziabad

Sub Code	KHU702
Sub. Name	Project Management & Entrepreneurship Development

COURSE OUTCOMES		Bloom's Level
CO1	To understand basic concept of entrepreneurship and its need, scope and development.	K2
CO2	To generate, manage and sustain entrepreneurial idea and business opportunities.	K6
CO3	To understand different aspects of managing a project.	K2
CO4	To understand the financial aspects and related risks of a project.	K2
CO5	To understand the process individuals develop and fund solutions that directly develop social issues.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	2	3	1	-	3	2	3	1	2
CO2	1	2	1	3	1	3	2	1	3	3	1	3
CO3	2	2	1	-	3	2	2	3	3	3	1	2
CO4	3	3	-	2	-	-	2	3	3	3	2	2
CO5	2	3	2	1	-	1	1	3	2	3	3	2
Avg	1.80	2.40	1.00	1.60	1.40	1.40	1.40	2.60	2.60	3.00	1.60	2.20

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	3
CO2	2	3	3	1
CO3	1	3	2	3
CO4	3	3	1	2
CO5	2	1	1	2
Avg	2.00	2.20	1.60	2.20



IMS Engineering College, Ghaziabad

Sub Code	KBT071
Sub. Name	Genomics and Proteomics

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to describe the basic structural organization of genome and various molecular biology based tools used for its analysis	K1
CO2	The student should be able to explain various DNA sequencing technologies, genome sequencing projects and recent advances of high throughput genomic sequencing	K2
CO3	The student should be able to discuss and use the bioinformatics resources for analysis and annotation of genomes	K2
CO4	The student should be able to describe and apply methods of proteome analysis	K2
CO5	The student should be able to explain pharmacogenetics and its role in drug development	K2
CO6	The student should be able to elaborate the role of functional genomics and proteomics and techniques used to investigate protein structure and function	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	2	-	-	-	3	3	2	3
CO2	3	3	1	2	2	-	-	-	3	3	2	3
CO3	3	3	2	2	2	-	-	-	3	3	2	3
CO4	3	3	2	2	2	-	-	-	3	3	2	3
CO5	3	3	2	2	2	-	-	1	3	3	2	3
CO6	3	3	2	2	2	-	-	-	3	3	2	3
Avg	3.00	2.83	1.67	2.00	2.00	-	-	1.00	3.00	3.00	2.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	2
CO2	3	3	3	2
CO3	3	3	3	3
CO4	3	3	3	2
CO5	3	3	3	2
CO6	3	3	3	2
Avg	3.00	3.00	3.00	2.17



IMS Engineering College, Ghaziabad

Sub Code	KBT 072
Sub. Name	Bioseparation & Down Stream Processing

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to evaluate the fundamentals of downstream processing for biochemical product recovery, process economics, process synthesis and simulation.	K5
CO2	Students should be able to apply different techniques used in cell disruption and removal of insolubles in DSP.	K3
CO3	Students should be able to use different techniques for product isolation or recovery.	K3
CO4	Students should be able to understand the principles, working and applications of different purification techniques used in DSP.	K2
CO5	Students should be able to use different product polishing techniques like drying and crystallization.	K3
CO6	Students should be able to apply different techniques for the DSP of some primary and secondary products.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2	2	-	-	1	-	1	2
CO2	2	2	3	2	2	2	-	-	1	-	1	2
CO3	2	2	3	2	2	2	-	-	1	-	1	2
CO4	3	2	2	2	3	2	-	-	1	-	1	2
CO5	3	3	2	-	3	2	-	-	1	-	1	2
CO6	3	2	2	2	3	2	-	-	1	-	2	2
Avg	2.50	2.17	2.33	2.00	2.50	2.00	#DIV/0!	#DIV/0!	1.00	#DIV/0!	1.17	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	3	1	-
CO2	3	2	2	-
CO3	2	2	2	-
CO4	2	2	2	1
CO5	2	2	2	1
CO6	-	2	2	-
Avg	2.20	2.17	1.83	1.00



IMS Engineering College, Ghaziabad

Sub Code	KBT-073
Sub. Name	Environmental Biotechnology

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to analyze reasons behind various forms of environmental pollutions and provide solutions to minimize or mitigate them.	K4
CO2	The student should be able to explain the microbial processes and growth requirements underlying the aerobic and anaerobic digestion.	K2
CO3	The student should be able to discuss the importance of microbial diversity in environmental systems and their exploitation in building waste water treatment systems.	K2
CO4	The student should be able to describe biotechnological solutions to convert waste into utilizable products.	K2
CO5	The student should be able to evaluate the potential for biodegradation of organic pollutants, taking microbial and physical/chemical environments, as well as the chemical structure of the compound itself, into consideration	K5
CO6	The student should be able to discuss the minimal national standards for waste disposal and the social, economic and environmental aspects of waste management.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	3	2	3	3	-	2	2	3	3
CO2	2	1	-	2	-	-	-	-	-	-	1	3
CO3	3	3	3	3	3	3	3	-	3	3	3	3
CO4	3	3	3	3	3	3	3	-	2	2	2	3
CO5	3	3	-	2	-	1	1	-	-	1	1	3
CO6	2	1	-	-	-	3	3	3	3	3	-	3
Avg	2.50	2.33	3.00	2.60	2.67	2.60	2.60	3.00	2.50	2.20	2.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	3	3
CO2	1	3	1	-
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	1	1
CO6	2	3	3	-
Avg	2.50	2.83	2.33	2.50



IMS Engineering College, Ghaziabad

Sub Code	KBT-075
Sub. Name	Biosafety, Bioethics and IPR

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to describe various forms of IPR and method of their registration	K2
CO2	The student should be able to state Indian Patent Law and International conventions and treaties	K1
CO3	The student should be able to debate legal, socio-economic and ethical issues of biotechnology	K5
CO4	The student should be able to apply rules governing manufacture, use/import/export and storage of hazardous microorganisms/ genetically engineered organisms or cells	K3
CO5	The student should be able to demonstrate biosafety issues and practices in biotechnology	K2
CO6	The student should be able to develop good lab practices, risk assessment and management	K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	2	3	1	-	3	2	3	1	2
CO2	1	2	1	3	1	3	2	1	3	3	1	3
CO3	2	2	1	-	3	2	2	3	3	3	1	2
CO4	3	3	-	2	-	-	2	3	3	3	2	2
CO5	2	3	2	1	-	1	1	3	2	3	3	2
CO6	3	3	2	2	2	-	-	2	3	3	2	2
Avg	2.00	2.50	1.40	2.00	2.25	1.75	1.75	2.50	2.67	3.00	1.67	2.17

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	3
CO2	2	3	3	1
CO3	1	3	2	3
CO4	3	3	1	2
CO5	2	1	1	2
CO6	2	3	2	3
Avg	2.00	2.33	1.67	2.33



IMS Engineering College, Ghaziabad

Sub Code	KBT-076
Sub. Name	Quality Control & Regulatory Affairs

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to understand basic concept of QC and Quality management	K2
CO2	Students should be able to explain GLP, GMP, Standard Operating Process and CPCSEA guidelines	K3
CO3	Students should be able to understand of the quality review and audits of QC practices	K2
CO4	Students should be able explain the clinical studies guidelines, Good documentation practices, IPR and product Registration guidelines etc.	K4
CO5	Students should be able to understand various quality standards in product registration	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2	2	1	1	1	1	2	1	2	2
CO2	1	1	1	1	1	1	1	1	1	1	2	2
CO3	1	2	2	2	2	1	1	1	2	1	2	1
CO4	1	1	2	1	1	1	1	1	1	1	2	1
CO5	1	1	2	1	1	1	1	1	1	1	1	1
Avg	1	1.2	1.8	1.4	1.2	1	1	1	1.4	1	1.8	1.4

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	1	1	1
CO2	1	2	1	2
CO3	1	2	1	2
CO4	2	1	1	1
CO5	1	1	1	1
Avg	1.2	1.4	1	1.4



IMS Engineering College, Ghaziabad

Sub Code	KOE074
Sub. Name	Renewable energy resources

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basic concept of various renewable energy resources and solar cell	K 2
CO2	Explain the concept, performance and application of solar thermal energy	K3
CO3	Explain the working principal and performance of geothermal energy and various kinds of fuel cells	K3
CO4	Understand the basic concept of thermo-electrical, thermionic conversions and wind energy	K3
CO5	Explain the availability and conversion theory of biomass energy, ocean thermal energy and tidal waves energy	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	3	1	3	1	2	1	2	2
CO2	2	3	3	3	3	2	3	1	2	1	2	3
CO3	3	3	3	3	2	2	3	1	2	1	2	2
CO4	3	3	3	3	2	2	3	1	2	1	3	3
CO5	3	3	3	3	2	2	3	1	2	1	2	2
Avg	2.6	2.8	2.8	2.8	2.4	1.8	3	1	2	1	2.2	2.4

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	1	1	1
CO2	1	1	1	1
CO3	1	1	1	1
CO4	1	1	1	1
CO5	2	2	2	2
Avg	1.2	1.2	1.2	1.2



IMS Engineering College, Ghaziabad

Sub Code	KBT751C
Sub. Name	Environmental Biotechnology Lab

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to describe the working of equipments used in environmental biotechnology lab.	K2
CO2	The student should be able to perform statistical analysis in the water quality testing	K3
CO3	The student should be able to prepare various solutions and chemical reagents.	K3
CO4	The student should be able to perform experiment to evaluate various parameters that affect the water quality	K3
CO5	The student should be able to apply general chemical techniques to evaluate microbial contamination of water	K3
CO6	The student should be able to apply general microbiological techniques to evaluate microbial contaminant in water	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	1	2	-	-	-	3	1	1	3
CO2	2	2	2	2	2	1	3	-	3	1	1	3
CO3	-	-	-	1	-	-	-	-	3	-	-	3
CO4	2	2	2	3	2	1	3	-	3	1	1	3
CO5	2	2	2	3	2	1	3	-	3	1	1	3
CO6	2	2	2	3	2	1	3	-	3	1	1	3
Avg	2.00	2.00	2.00	2.17	2.00	1.00	3.00	-	3.00	1.00	1.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	-	3	-
CO2	3	1	3	-
CO3	1	-	-	-
CO4	3	1	3	3
CO5	3	1	3	3
CO6	3	1	3	3
Avg	2.33	1.00	3.00	3.00



IMS Engineering College, Ghaziabad

Sub Code	KBT 752
Sub. Name	Bioseparation & Down Stream Processing Lab

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to use various techniques for harvesting and disruption of the microbial cells.	K3
CO2	The student should be able to use different techniques for Product isolation.	K3
CO3	The student should be able to purification Protein by precipitation and solvent extraction methods.	K3
CO4	The student should be able to use separate techniques like chromatography & electrophoresis.	K3
CO5	The student should be able to estimate the protein, DNA and carbohydrates.	K3
CO6	The student should be able to use various techniques for packaging and labelling of recombinant biopharmaceutical products.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	3	-	2	2	1	-	1	-	2	3
CO2	1	2	3	1	2	2	1	-	1	-	2	3
CO3	1	2	3	1	2	2	-	-	1	-	2	3
CO4	1	2	3	1	2	2	-	-	1	-	2	3
CO5	1	2	3	1	2	2	-	-	1	-	2	3
CO6	1	2	3	-	2	2	1	-	1	-	2	3
Avg	1.00	2.00	3.00	1.00	2.00	2.00	1.00	-	1.00	-	2.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	1	1
CO2	3	1	1	1
CO3	2	1	1	1
CO4	2	1	1	2
CO5	2	1	1	2
CO6	1	2	1	1
Avg	2.00	1.33	1.00	1.33



IMS Engineering College, Ghaziabad

SEMESTER- VIII													
Sl. No.	Subject	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
	Codes		L	T	P	CT	TA	Total	PS	TE	PE		
1	KHU801/ KHU802	HSMC- 2*/HSMC-1*	3	0	0	30	20	50		100		150	3
2		Open Elective-III	3	0	0	30	20	50		100		150	3
3		Open Elective-IV	3	0	0	30	20	50		100		150	3
4	KBT851	Project II	0	0	18				100		300	400	9
5		MOOCs (Essential for Hous. Degree)	9	0	18								
		Total										850	18



IMS Engineering College, Ghaziabad

Sub Code	KHU-801
Sub. Name	Rural Development : Administration & Planning

COURSE OUTCOMES		Bloom's Level
CO1	Students can understand the definitions, concepts and components of Rural Development	K2
CO2	Students will know the importance, structure, significance, resources of Indian rural economy	K1
CO3	Students will have a clear idea about the area development programmes and its impact	K1
CO4	Students will be able to acquire knowledge about rural entrepreneurship	K2
CO5	Students will be able to understand about the using of different methods for human resource planning	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				3	1	3		2		2	2	3
CO2					1	3	3	2		2	3	3
CO3			2		1	3	3	1	3	2	1	3
CO4			2		1	3	3	2	3	2	2	3
CO5			2		1	3	3	2	3	2	2	3
Avg			2.00	3.00	1.00	3.00	3.00	1.80	3.00	2.00	2.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1		2	2
CO2	1			1
CO3		1		2
CO4	1		2	2
CO5		1	2	2
Avg	1.00	1.00	2.00	1.80



IMS Engineering College, Ghaziabad

Sub Code	KOE-083
Sub. Name	Project Management & Entrepreneurship Development

COURSE OUTCOMES		Bloom's Level
CO1	The student should be able to identify and analyze the opportunities for entrepreneurship and innovation in various sectors.	K4
CO2	The student should be able to apply the principles of Project management including the idea generation, project identification, project formulation, project design and network analysis, project report, project appraisal.	K3
CO3	The student should be able to evaluate and analyse the financials of a business or enterprise.	K5
CO4	The student should be able to describe the funding opportunities and other financial alternatives available for business.	K2
CO5	The student should be able to explain the steps for setting up Small, Medium & Large scale industry.	K2
CO6	The student should be able to describe the incentives, subsidies and export possibilities available for biotech business.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	2	3	1	-	3	2	3	1	2
CO2	1	2	1	3	1	3	2	1	3	3	1	3
CO3	2	2	1	-	3	2	2	3	3	3	1	2
CO4	3	3	-	2	-	-	2	3	3	3	2	2
CO5	2	3	2	1	-	1	1	3	2	3	3	2
CO6	3	3	2	2	2	-	-	2	3	3	2	2
Avg	2.00	2.50	1.40	2.00	2.25	1.75	1.75	2.50	2.67	3.00	1.67	2.17

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	3
CO2	2	3	3	1
CO3	1	3	2	3
CO4	3	3	1	2
CO5	2	1	1	2
CO6	2	3	2	3
Avg	2.00	2.33	1.67	2.33



IMS Engineering College, Ghaziabad

Sub Code	KOE-093
Sub. Name	Data Warehousing & Data Mining

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to describe data warehouses, models and the need for data warehousing	K2
CO2	The students will be able to summarize the data warehousing processes and technologies	K2
CO3	The students will be able to gain knowledge about data mining and its functionality	K1
CO4	The students will be able to understand the concepts of classification, prediction and cluster analysis.	K2
CO5	The students will be able to learn about data visualization and overall perspective	K1

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3	3	3	3			3		2	3	2
CO2	1	2	2	3	3			3			2	2
CO3	1	2	2	3	3			3			2	2
CO4	1	2	2	3	3			3			2	2
Avg	1.00	2.25	2.25	3.00	3.00			3.00		2.00	2.25	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	2	1
CO2	3	3	2	1
CO3	3	3	2	1
CO4	3	3	2	1
Avg	3.00	3.00	2.00	1.00



IMS Engineering College, Ghaziabad

**Department of
Computer Science &
Engineering**

2021-22



IMS Engineering College, Ghaziabad

Course Outcomes (CO)
mapping with
Programme Outcomes
(PO)
and
Programme Specific
Outcomes (PSO)



Institute Vision and Mission

Vision

Our vision is to impart Vibrant, Innovative and Global Education to make IMS the world leader in terms of Excellence of Education, Research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a Centre of Excellence in Technical and Management Education.
- To inculcate in its students the qualities of Leadership, Professionalism, Executive Competence and Corporate understanding.
- To imbibe and enhance Human Values, Ethics and Morals in our students.
- To transform students into Globally Competitive Professionals



Department Vision and Mission

Vision

To be recognized as a Centre of Excellence imparting quality education and creating new opportunities for students to meet the challenges of technological development in Computer Science & Engineering.

Mission

- To promote technical proficiency by adopting effective teaching learning processes.
- To provide environment & opportunity for students to bring out their inherent talents for all round development.
- To promote latest technologies in Computer Science & Engineering and across disciplines in order to serve the needs of Industry, Government, Society, and the scientific community.
- To educate students to be Successful, Ethical and Effective problem-solvers and Life-Long learners who will contribute positively to the society.



Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Program Educational Objectives

1. Graduates of the program will be able to apply fundamental principles of engineering in problem solving and understand the role of computing in multiple disciplines.
2. Graduates will learn to apply various computational techniques & tools for developing solutions & projects in real world.
3. Be employed as computer science professionals beyond entry-level positions or be making satisfactory progress in graduate programs.
4. Demonstrate that they can function, communicate, collaborate and continue to learn effectively as ethically and socially responsible computer science professionals.

Program Specific Outcomes (PSO)

1. Foundation of Computer System: Ability to understand the principles and working of computer systems.
2. Foundations of Software development: Possess professional skills and knowledge of software design process. Familiarity and practical competence with a broad range of programming language and open-source platforms.
3. Foundation of mathematical concepts: Ability to apply mathematical methodologies to solve computation task, model real world problem using appropriate data structure and suitable algorithm.
4. Applications of Computing and Research Ability: Ability to use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations.



IMS Engineering College, Ghaziabad

B.TECH (COMPUTER SCIENCE AND ENGINEERING)

SEMESTER- III

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KOE031-38/ KAS302	Engineering Science Course/Maths IV	3	1	0	30	20	50		100		150	4
2	KAS301/ KVE 301	Technical Communication/Universal Human values	2	1	0	30	20	50		100		150	3
			3	0	0								
3	KCS301	Data Structure	3	1	0	30	20	50		100		150	4
4	KCS302	Computer Organization and Architecture	3	1	0	30	20	50		100		150	4
5	KCS303	Discrete Structures & Theory of Logic	3	0	0	30	20	50		100		150	3
6	KCS351	Data Structures Using C Lab	0	0	2				25		25	50	1
7	KCS352	Computer Organization Lab	0	0	2				25		25	50	1
8	KCS353	Discrete Structure & Logic Lab	0	0	2				25		25	50	1
9	KCS354	Mini Project or Internship Assessment*	0	0	2			50				50	1
10	KNC301/ KNC302	Computer System Security/Python Programming	2	0	0	15	10	25		50			0
11		MOOCs (Essential for Hons. Degree)											
		Total										950	22
*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.													



IMS Engineering College, Ghaziabad

Sub Code	KAS-302
Sub. Name	MATHS-IV

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to learn the idea of partial differentiation and types of partial differential equations	K1 & K3
CO2	The students will be able to learn the idea of classification of second partial differential equations, wave, heat equation and transmission lines	K4 & K5
CO3	The students will be able to learn the basic ideas of statistics including measures of central tendency, correlation, regression and their properties.	K2
CO4	The students will be able to learn the ideas of probability and random variables and various discrete and continuous probability distributions and their properties.	K1 & K5
CO5	The students will be able to learn the statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.	K3 & K6

CO-PO Matrix												
Course Outcome	PO 1	PO2	PO 3	PO4	PO 5	PO 6	PO 7	PO 8	PO9	PO10	PO11	PO12
CO1	2	2	-	-	1	-	1	-	-	1	1	-
CO2	2	2	1	-	-	-	1	-	-	-	1	1
CO3	2	2	1	1	1	-	-	-	1	1	1	1
CO4	2	2	-	1	1	-	-	-	-	-	1	1
CO5	2	2	1	2	1	-	1	-	1	1	1	1
Avg	2	2	1	1.33	1		1		1	1	1	1

CO-PSO Matrix				
Cos	PSO1	PSO2	PSO3	PSO4
CO1	1	-	1	-
CO2	1	-	2	1
CO3	1	-	1	-
CO4	1	1	1	-
CO5	1	1	2	1
Avg	1	1	1.4	1



IMS Engineering College, Ghaziabad

Sub Code	KAS 301
Sub. Name	TECHNICAL COMMUNICATION

COURSE OUTCOMES		Bloom's Level
CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.	K2
CO2	Student will utilize the technical writing for Technical communication and its exposure in various dimensions.	K2
CO3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.	K2
CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.	K6
CO5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2		1	2	1	1	3	3	2	1
CO2	1	2	3		3	2				3	2	3
CO3	1	2	3		3	2	1	2	3	3	2	3
CO4	2	2	3	1	3	3		1	3	3	3	3
CO5	1	1	3	1	1		3	3	3	3	1	3
Avg	1.2	1.6	2.8	1	2.2	2.25	1.67	1.75	3	3	2	2.6

CO-PSO Matrix				
Cos	PSO1	PSO2	PSO3	PSO4
CO1		2		3
CO2		1		3
CO3	2			3
CO4	1	3		3
CO5				1
Avg	1.5	2		2.6



IMS Engineering College, Ghaziabad

Sub Code	KCS-301
Sub. Name	Data Structure

COURSE OUTCOMES		Bloom's Level
CO1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.	K1, K2
CO2	Discuss the computational efficiency of the sorting and searching algorithms.	K2
CO3	Implementation of Trees and Graphs and perform various operations on these data structure.	K3
CO4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion.	K4
CO5	Identify the alternative implementations of data structures with respect to its performance to solve a real-world problem.	K5, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2	2	1	1						3
CO2	2	2	3	2	1							3
CO3	1	2	2	2	1	2						3
CO4	2	2	2	2	1							3
CO5	2	2	3	2	1	2						2
Avg	1.6	1.8	2.4	2	1	1.67						2.8

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2	2	
CO2	1	3	2	
CO3	1	2	2	2
CO4	1	2	2	2
CO5	1	1	2	2
Avg	1	2	2	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-302
Sub. Name	Computer Organization & Architecture

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to study of the basic structure and operation of a digital computer system.	K1, K2
CO2	Student will be able to analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating point arithmetic operations.	K2, K4
CO3	Student will be able to implement control unit techniques and the concept of Pipelining	K3
CO4	Student will be able to understand the hierarchical memory system, cache memories and virtual memory	K2
CO5	Student will be able to understand the different ways of communicating with I/O devices and standard I/O interfaces	K2, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	-	-	-	-	-	-	-	1
CO2	3	3	3	2	2	-	1	-	-	-	-	3
CO3	3	3	3	3	2	1	1	-	-	-	-	3
CO4	3	3	3	3	2	1	1	-	-	-	-	3
CO5	3	3	3	3	2	1	1	-	-	-	-	3
Avg	2.8	2.8	2.6	2.4	2	1	1	-	-	-	-	2.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	-	3	1
CO2	2	1	3	2
CO3	2	-	3	2
CO4	3	1	3	3
CO5	3	-	2	2
Avg	2.4	1	2.8	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-303
Sub. Name	Discrete Structures and Theory of logic

COURSE OUTCOMES		Bloom's Level
CO1	Write an argument using logical notation and determine if the argument is or is not valid.	K3,K4
CO2	Understand the basic principles of sets and operations in sets.	K1,K2
CO3	Demonstrate an understanding of relations and functions and be able to determine their properties.	K3
CO4	Demonstrate different traversal methods for trees and graphs	K1,K4
CO5	Model problems in Computer Science using graphs and trees.	K2,K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1										1
CO2	1	3		2								1
CO3	3	2	2									1
CO4	3	2	2	1								2
CO5	3	2	1	1	3							1
Avg	2.4	2	1.67	1.33	3							1.2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1		
CO2		2	1	
CO3		3	3	
CO4		3	3	1
CO5		3	3	2
Avg	2	2.4	2.5	1.5



IMS Engineering College, Ghaziabad

Sub Code	KCS-351
Sub. Name	Data Structure Using C Lab

COURSE OUTCOMES		Bloom's Level
CO1	Interpret and compute asymptotic notations of an algorithm to analyze the consumption of resources (time/space).	K2, K5
CO2	Exemplify and implement stack, queue and list ADT, tree and graph to manage the memory using static and dynamic allocations.	K3
CO3	Implement binary search tree to design applications like expression trees.	K5
CO4	Identify, model, solve and develop code for real life problems like shortest path and MST using graph theory.	K1
CO5	Develop and compare the comparison-based search algorithms and sorting Algorithms.	K6
CO6	Identify appropriate data structure and algorithm for a given contextual problem and develop in C.	K1

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2	1	1					1	3
CO2	2	3	3	2	1	1					1	3
CO3	3	2	3	2	1	1					1	2
CO4	3	2	3	2	1	1					1	3
CO5	2	3	3	2	1	1					1	2
CO6	2	3	3	2	1	1					1	2
Avg	2.3333	2.67	3	2	1	1					1	2.5

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	2
CO2	3	3	1	2
CO3	3	3	1	2
CO4	3	3	3	2
CO5	3	3	1	2
CO6	3	3	1	2
Avg	3	3	1.33	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-352
Sub. Name	Computer Organization Lab

COURSE OUTCOMES		Bloom's Level
CO1	Define, Apply and Design basic digital circuits	K1, K3, K6
CO2	Discuss, Design and Calculate 8 bits I/O, ALU and RTL	K2, K3, K6
CO3	Explain, apply and design the concept of control unit and memory unit	K2, K3, K6
CO4	Define and design algorithm using simulators	K1, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2										1
CO2	1	2	1									1
CO3	1	2	1									1
CO4	1	2	1	1								1
Avg	1.00	2.00	1.00	1.00								1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	1		1
CO2	1	1		1
CO3	1	1		1
CO4	1	1	1	1
Avg	1.00	1.00	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KCS-353
Sub. Name	Discrete Structures and Theory of logic lab

COURSE OUTCOMES		Bloom's Level
CO1	Students would be having understanding of working with a mathematical tool Maple	K2
CO2	Students would be able to perform programs of recursion, combinatorics and counting	K3
CO3	Students would be able to perform programs of set theory, set operations and probability	K3
CO4	Student would be able to implement classical mathematical problems like Birthday paradox based on pigeonhole principle.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	1						1		2
CO2	3	2	3	2	2					2		3
CO3	3	2	2	2	1	1					2	2
CO4	3	2	2	2	1	1						3
Avg	3.00	2.00	2.50	1.75	1.33	1.00				1.50	2.00	2.50

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	1	2
CO2	3	2	2	2
CO3	3	2	2	2
CO4	2	3	2	2
Avg	2.75	2.00	1.75	2.00



IMS Engineering College, Ghaziabad

Sub Code	KCS354
Sub. Name	Summer training/Internship/Mini Project

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to identify and present the objective and the work done during training	K1
CO2	Students will be able to apply the learned concept through design, analysis and development of mini project	K3
CO3	Students will be able to design and implementation of mini project during their training.	K3, K6
CO4	Students will be able to discuss the result/output and prepare a mini project report	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1	1	1		1	1		1	1
CO2	2	2	1	1	1	1		1	1	1	1	1
CO3	2	3	3	2	2	1		1	2	2	3	2
CO4	1	2	1	2	1			1	2	1	1	1
Avg	1.50	2.00	1.50	1.50	1.25	1.00		1.00	1.50	1.33	1.50	1.25

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2	1	
CO2	1	2	1	1
CO3	1	1	1	1
CO4	1	1		1
Avg	1.00	1.50	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KNC-302
Sub. Name	Python Programming

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to describe the numbers, math functions, strings, list, tuples and dictionaries in python	K1
CO2	Students will be able to acquire the skills to apply different decision-making statements and functions in python	K3
CO3	Students will be able to interpret object-oriented programming in python	K5
CO4	Students will be able to develop skill to understand and summarize different file handling operations	K6
CO5	Students will be able to demonstrate the ability to design GUI applications in python and evaluate different database operations	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3				3	3
CO2	3	2	3	3	2	3	2				3	3
CO3	3	2	3	2	3	3	3				3	2
CO4	3	2	3	2	2	2	2				2	3
CO5	3	2	3		3	3	2				2	3
Avg	3.00	2.00	2.80	2.50	2.60	2.60	2.40				2.60	2.80

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	2	1
CO2	2	1	1	1
CO3	2	1	1	1
CO4	2	1	1	1
CO5	2	1	1	1
Avg	2.00	1.00	1.20	1.00



IMS Engineering College, Ghaziabad

SEMESTER- IV													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS402/ KOE041-48	Maths IV/Engg. Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS301	Universal Human Values/ Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3	KCS401	Operating Systems	3	0	0	30	20	50		100		150	3
4	KCS402	Theory of Automata and Formal Languages	3	1	0	30	20	50		100		150	4
5	KCS403	Microprocessor	3	1	0	30	20	50		100		150	4
6	KCS451	Operating Systems Lab	0	0	2				25		25	50	1
7	KCS452	Microprocessor Lab	0	0	2				25		25	50	1
8	KCS453	Python Language Programming Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming/Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											
		Total										900	21



IMS Engineering College, Ghaziabad

Sub Code	KOE044
Sub. Name	Sensor & Instrumentation

COURSE OUTCOMES		Bloom's Knowledge Level
CO1	Student will be able to apply the use of sensors for measurement of displacement, force and pressure.	K3
CO2	Student will be able to employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	K2
CO3	Student will be able to demonstrate the use of virtual instrumentation in automation industries.	K3
CO4	Student will be able to identify and use data acquisition methods.	K1
CO5	Student will be able to comprehend intelligent instrumentation in industrial automation.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1		2	2						2
CO2	1	2	1	1	2	2					1	2
CO3	2	2	2	2	3	1				1	1	2
CO4	1	1	1	2	3	1	1					2
CO5	2	2	1	2	3	1				1	1	2
Avg	1.60	1.60	1.20	1.75	2.60	1.40	1.00			1.00	1.00	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1			3	2
CO2			2	3
CO3	1	1	2	1
CO4	2	2	2	3
CO5	2	2	1	3
Avg	1.67	1.67	2.00	2.40



IMS Engineering College, Ghaziabad

Sub Code	KVE-401
Sub. Name	Universal Human Values & Professional Ethics

COURSE OUTCOMES		Bloom's Knowledge Level
CO1	Students who complete this course should be able to realize the importance & need of human values and value education to human being.	K2
CO2	Students should be able to realize the importance of self exploration in harmony of family.	K2
CO3	They should be able to understand and appreciate role of harmonious family in peaceful society.	K2
CO4	Students who complete this course should be able to investigate his/her self & make it suitable to society and existence.	K4
CO5	Students should be able to apply the ethical and human values in family, society, nature and professional life.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						3						2
CO2						3	2	2				
CO3						3	2		2			
CO4							2	2				
CO5							3	3				2
Avg						3	2.25	2.33	2			2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	
CO2	2	2	1	
CO3	2	1	1	
CO4	1	1	1	
CO5	1	1	1	
Avg	1.8	1.4	1	



IMS Engineering College, Ghaziabad

Sub Code	KCS-401
Sub. Name	Operating System

COURSE OUTCOMES		Bloom's Level
CO1	Understand the structure and functions of OS	K1, K2
CO2	Learn about Processes, Threads and Scheduling algorithms.	K1, K2
CO3	Understand the principles of concurrency and Deadlocks	K2
CO4	Learn various memory management scheme	K2
CO5	Study I/O management and File systems.	K2, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1											1
CO2	2	1	1									2
CO3	2	2	2	1								2
CO4	2	1	1									1
CO5	2	2	2	1								2
Avg	1.8	1.5	1.5	1								1.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	2
CO2	1	2	2	2
CO3	2	2	2	2
CO4	2	2	1	2
CO5	2	2	2	2
Avg	1.8	1.8	1.6	2.0



IMS Engineering College, Ghaziabad

Sub Code	KCS402
Sub. Name	Theory of Automata and Formal Languages

Course Outcome (CO)		Bloom's Knowledge Level (KL)
CO1	Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and grammars	K4, K6
CO2	Analyse and design, Turing machines, formal languages, and grammars	K4, K6
CO3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving	K1, K5
CO4	Prove the basic results of the Theory of Computation.	K2, K3
CO5	State and explain the relevance of the Church-Turing thesis.	K1, K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	3	2								1
CO2	1	2	2	2								1
CO3	1	2	2	2								2
CO4	1	2	2	1								1
CO5	1	2	2	1								1
Avg.	1	2	2.2	1.6								1.2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	1		2
CO2	1	1		2
CO3	1			2
CO4	1	1		2
CO5	1		1	1
Avg.	1	1	1	1.8



IMS Engineering College, Ghaziabad

Sub Code	KCS 403
Sub. Name	Microprocessor

COURSE OUTCOMES		Bloom's Level
CO1	Apply a basic concept of digital fundamental to microprocessor-based computer system.	K3, K4
CO2	Analyze a detailed software and hardware structure of the microprocessor	K2, K4
CO-3	Illustrate how the different peripherals (8085/8086) are interfaced with microprocessor	K3
CO4	Analyze the characteristics of Microprocessor	K4
CO5	Evaluate the data transfer information through serial and parallel ports	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1		1	1	-	-	-	2	1	1	-
CO2	3	1	1	2	1	-	-	-	1	2	1	2
CO3	2	2	1	1	1	-	-	-	2	1	1	-
CO4	3	2	2	2	1	-	-	-	1	-	-	-
CO5	3	3	1	1	1	-	-	-	2	1	2	1
Avg	2.6	1.8	1.25	1.4	1	-	-	-	1.6	1.25	1.25	1.5

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	1
CO2	2	3	-	-
CO3	2	2	1	1
CO4	2	2	-	-
CO5	2	2	2	-
Avg	2.2	2.2	1.67	1



IMS Engineering College, Ghaziabad

Sub Code	KCS-451
Sub. Name	Operating System lab

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to design and interpret various CPU scheduling algorithm.	K5, K6
CO2	Students will be able to design, develop and implement programs for deadlock handling.	K3, K6
CO3	Students will be able to apply and analyse different page replacement algorithms.	K3, K4
CO4	Students will be able to develop and compare various disk scheduling algorithms	K2, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2						1			1
CO2	1	2	2	1					1			1
CO3	1	2	2						1			1
CO4	1	2	2						1			1
Avg	1	2	2	1					1			1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	2	1
CO2	2	2	2	1
CO3	2	2	2	1
CO4	2	2	2	1
Avg	2	2	2	1



IMS Engineering College, Ghaziabad

Sub Code	KCS 452
Sub. Name	Microprocessor Lab

COURSE OUTCOMES		Bloom's Level
CO1	Student able to perform experiment of his own.	K3, K5
CO2	Student must able to understand the logic behind experiment and demonstrate the outcome effectively	K2, K4
CO3	Student must able to present the experiment with results effectively.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	3	2	-	-	-	-	3	-	-	3
CO2	2	3	2	3	-	-	-	-	1	3	-	3
CO3	1	1	1	1	-	-	-	-	-	1	-	3
Avg	1.67	1.67	2	2	-	-	-	-	2	2	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	-	2	-
CO2	2	-	3	-
CO3	2	-	2	-
Avg	2	-	2.33	-



IMS Engineering College, Ghaziabad

Sub Code	KCS453
Sub. Name	Python Language Programming Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to describe the numbers, math functions, strings, list, tuples and dictionaries in python	K2
CO2	Students will be able to acquire the skills to apply different decision-making statements and functions in python	K2, K3
CO3	Students will be able to interpret object-oriented programming in python	K2, K3
CO4	Students will be able to develop skill to understand and summarize different file handling operations	K3, K4
CO5	Students will be able to demonstrate the ability to design GUI applications in python and evaluate different database operations	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3				3	3
CO2	3	2	3	3	2	3	2				3	3
CO3	3	2	3	2	3	3	3				3	2
CO4	3	2	3	2	2	2	2				2	3
CO5	3	2	3		3	3	2				2	3
Avg	3.00	2.00	2.80	2.50	2.60	2.60	2.40				2.60	2.80

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	2	1
CO2	2	1	1	1
CO3	2	1	1	1
CO4	2	1	1	1
CO5	2	1	1	1
Avg	2.00	1.00	1.20	1.00



IMS Engineering College, Ghaziabad

Sub Code	KNC-401
Sub. Name	Computer System and Security

	COURSE OUTCOMES	Bloom's Level
CO1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	K3
CO2	To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threat	K3
CO3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.	K2, K3
CO4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios	K2
CO5	To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques.	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1								2
CO2	2	2	3	1	1				1			2
CO3	2	2	2	2	1						1	2
CO4	2	2	2	2	1						1	2
CO5	2	2	2	2	1						1	2
Avg	2.00	2.00	2.00	1.60	1.00				1.00		1.00	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	2
CO2	2	2	1	1
CO3	2	2	1	1
CO4	2	2	1	1
CO5	2	2	1	1
Avg	2.20	2.20	1.00	1.20



IMS Engineering College, Ghaziabad

B.TECH (COMPUTER SCIENCE & ENGINEERING/ COMPUTER SCIENCE) CURRICULUM STRUCTURE

SEMESTER- V													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCS501	Database Management System	3	1	0	30	20	50		100		150	4
2	KCS502	Compiler Design	3	1	0	30	20	50		100		150	4
3	KCS503	Design and Analysis of Algorithm	3	1	0	30	20	50		100		150	4
4	Deptt. Elective-I	Departmental Elective-I	3	0	0	30	20	50		100		150	3
5	Deptt. Elective-II	Departmental Elective-II	3	0	0	30	20	50		100		150	3
6	KCS551	Database Management System Lab	0	0	2				25		25	50	1
7	KCS552	Compiler Design Lab	0	0	2				25		25	50	1
8	KCS553	Design and Analysis of Algorithm Lab	0	0	2				25		25	50	1
9	KCS554	Mini Project or Internship Assessment*	0	0	2				50			30	1
10	KNC501/ KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			
11		MOOCs (Essential for Hons. Degree)											
		Total	17	3	8							950	22

*The Mini Project or internship (4 weeks) conducted during summer break after IV semester and will be assessed during V semester.

Departmental Elective-I

1. KCS-051 Data Analytics
2. KCS-052 Web Designing
3. KCS-053 Computer Graphics
4. KCS-054 Object Oriented System Design

Departmental Elective-II

1. KCS-055 Machine Learning Techniques
2. KCS-056 Application of Soft Computing
3. KCS-057 Augmented & Virtual Reality
4. KCS-058 Human Computer Interface



IMS Engineering College, Ghaziabad

Sub Code	KCS-501
Sub. Name	Database Management System

COURSE OUTCOMES		Bloom's Level
CO1	Apply knowledge of database for real life applications.	K3
CO2	Apply query processing techniques to automate the real time problems of databases.	K3, K4
CO3	Identify and solve the redundancy problem in database tables using normalization.	K2, K3
CO4	Understand the concepts of transactions, their processing so they will familiar with broad range of database management issues including data integrity, security and recovery.	K2, K4
CO5	Design, develop and implement a small database project using database tools.	K3, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	2							3
CO2	3	3	2	3	2							3
CO3	3	3	2	3	2							3
CO4	3	3	2	3	2							3
CO5	3	3	2	3	2							3
Avg	3	3	2	3	2							3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	3	1
CO2	3	1	3	1
CO3	3	1	3	1
CO4	3	1	3	1
CO5	3	1	3	1
Avg	3	1	3	1



IMS Engineering College, Ghaziabad

Sub Code	KCS-502
Sub. Name	Compiler Design

COURSE OUTCOMES		Bloom's Level
CO1	Acquire knowledge of different phases and passes of the compiler and also able to use the compiler tools like LEX, YACC, etc. Students will also be able to design different types of compiler tools to meet the requirements of the realistic constraints of compilers.	K3, K6
CO2	Understand the parser and its types i.e. Top-Down and Bottom-up parsers and construction of LL, SLR, CLR, and LALR parsing table	K2, K6
CO3	Implement the compiler using syntax-directed translation method and get knowledge about the synthesized and inherited attributes.	K4, K5
CO4	Acquire knowledge about run time data structure like symbol table organization and different techniques used in that.	K2, K3
CO5	Understand the target machine's run time environment, its instruction set for code generation and techniques used for code optimization.	K2, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2									2
CO2	2	2	3	2	1							3
CO3	1	2	2	2	1							2
CO4	2	2	2	2	1						1	3
CO5	2	2	3	2	1						1	2
Avg	1.6	1.8	2.4	2	1						1	2.4

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	1	1
CO2	1	3	2	1
CO3	3	2	1	1
CO4	3	2	2	1
CO5	3	2	2	1
Avg	2.6	2	1.6	1



IMS Engineering College, Ghaziabad

Sub Code	KCS-503
Sub. Name	Design & analysis of algorithm

	COURSE OUTCOMES	Bloom's Level
CO1	Understand the process of analysing the Time and Space complexity of algorithms. Sorting problems will be evaluated for time and space complexity.	K2
CO2	Understand and apply the concepts Advance data structures like Red- Black Trees, B-Trees, Binomial Heaps, Fibonacci Heaps, etc.	K1, K3
CO3	Apply the Divide & conquer design strategy to various problems. Understanding the difference between Divide & Conquer & Dynamic programming design strategies.	K3, K4
CO4	Understanding and applying the concepts of Greedy programming, Back Tracking & Branch & Bound algorithm design approaches to problems of real world.	K2, K3
CO5	Understand the concepts of applying the Non-Deterministic and approximation approach to complex problems	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2									3
CO2	2	2	3	3	2				2			2
CO3	2	2	3	3	2				2			3
CO4	2	2	3	3	2				2			3
CO5	1	1	1	1								2
Avg	2	2	2.4	2.5	2				2			2.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	3	
CO2	2	2	3	2
CO3	2	2	3	2
CO4	2	2	3	2
CO5	2	2	1	2
Avg	2	1.8	2.6	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-052
Sub. Name	Web Designing

COURSE OUTCOMES		Bloom's Level
CO1	Understand principle of Web page design and about types of websites	K2
CO2	Visualize and recognize the basic concept of HTML and application in web designing.	K2, K3
CO3	Recognize and apply the elements of Creating Style Sheet (CSS).	K2, K3
CO4	Understand the basic concept of Java Script and its application.	K2
CO5	Introduce basics concept of Web Hosting and apply the concept of SEO	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1	3				1	3	1	3
CO2	1	1	2	1	3				3	3	2	3
CO3	1	1	2	1	3				3	3	3	3
CO4	1	1	3	3	3				3	3	3	3
CO5	1	1	3	1	3			3	3	3	3	3
Avg	1	1	2.2	1.4	3			3	2.6	3	2.4	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	3
CO2	3	3	2	3
CO3	3	3	2	3
CO4	3	3	2	3
CO5	3	3	2	3
Avg	3	2.8	2	3



IMS Engineering College, Ghaziabad

Sub Code	KCS-056
Sub. Name	Application of Soft Computing

COURSE OUTCOMES		Bloom's Level
CO1	Recognize the feasibility of applying a soft computing methodology for a particular problem	K2, K4
CO2	Understand the concepts and techniques of soft computing and foster their abilities in designing and implementing soft computing based solutions for real-world and engineering problems.	K2, K4, K6
CO3	Apply neural networks to pattern classification and regression problems and compare solutions by various soft computing approaches for a given problem.	K3, K5
CO4	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems	K3, K4
CO5	Apply genetic algorithms to combinatorial optimization problems	K3, K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		3								2
CO2	3		3	2		2	1					2
CO3	3	3	2	3							2	2
CO4	3		1					1			2	2
CO5	3	3	2								2	2
Avg	3	3	2	2.66		2	1	1			2	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3			1
CO2	3			
CO3	2	3	2	3
CO4	2	3	3	3
CO5	2	3		3
Avg	2.4	3	2.5	2.5



IMS Engineering College, Ghaziabad

Sub Code	KCS-551
Sub. Name	Database Management System Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand and apply oracle 11 g products for creating tables, views, indexes, sequences and other database objects.	K2, K4
CO2	Design and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system.	K5, K6
CO3	Write and execute simple and complex queries using DDL, DML, DCL and TCL	K4, K5
CO4	Write and execute PL/SQL blocks, procedure functions, packages and triggers, cursors.	K4, K5
CO5	Enforce entity integrity, referential integrity, key constraints, and domain constraints on database.	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2							3
CO2	3	2	2	2	2							3
CO3	3	2	2	2	2							3
CO4	3	2	2	2	2							3
CO5	3	2	2	2	2							3
Avg	3	2	2	2	2							3

CO-PSO Matrix				
Cos	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1
CO2	3	2	1	1
CO3	3	2	1	1
CO4	3	2	1	1
CO5	3	2	1	1
Avg	3	2	1	1



IMS Engineering College, Ghaziabad

Sub Code	KCS-552
Sub. Name	Compiler Design lab

COURSE OUTCOMES		Bloom's Level
CO1	Identify patterns, tokens & regular expressions for lexical analysis	K2
CO2	Design Lexical analyser for given language using C and LEX /YACC tools	K3, K5
CO3	Design and analyse top down and bottom up parsers.	K4, K5
CO4	Generate the intermediate code	K4, K5
CO5	Generate machine code from the intermediate code forms	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2									2
CO2	1	2	1	1	1							1
CO3	1	2	2	2	1							2
CO4	2	2	1	1	1						1	1
CO5	1	2	1	2	1						1	2
Avg	1.2	1.8	1.4	1.5	1						1	1.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	1
CO2	1	2	2	1
CO3	2	1	1	1
CO4	1	2	1	1
CO5	2	2	2	1
Avg	1.6	1.6	1.4	1



IMS Engineering College, Ghaziabad

Sub Code	KCS-553
Sub. Name	Design and Analysis of Algorithm Lab

COURSE OUTCOMES		Bloom's Level
CO1	Implement algorithm to solve problems by iterative approach.	K4, K5
CO2	Implement algorithm to solve problems by divide and conquer approach	K4, K5
CO3	Implement algorithm to solve problems by Greedy algorithm approach.	K4, K5
CO4	Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach.	K4, K5
CO5	Implement algorithm to solve problems by branch and bound approach.	K4, K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	1							2
CO2	2	2	2	2	2							2
CO3	2	2	2	2	2							2
CO4	2	2	2	2	2							2
CO5	2	2	2	2	2							2
Avg	2	2	2	1.8	1.8							2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	2	2
CO2	2	2	2	2
CO3	2	2	2	2
CO4	2	2	2	2
CO5	2	2	2	2
Avg	2	2	2	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-554
Sub. Name	Mini-Project or Internship Assessment

COURSE OUTCOMES		Bloom's Level
CO1	Students are expected to present the objective and the work done during training	K2, K3
CO2	Students are expected to apply the learned concept through design, analysis and development of mini project	K2, K3
CO3	Students are expected to present overall working and implementation of mini project during their presentation	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	2	1	1		1	1	1	1	1
CO2	3	3	3	3	3	1	1	1	2	2	3	2
CO3	3	3	3	3	3			2		3	3	3
CO4	1	1	3	2	3			1		3	2	2
Avg	2.00	2.25	2.50	2.50	2.50	1.00	1.00	1.25	1.50	2.25	2.25	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2	2	1
CO2	3	3	3	3
CO3	3	3	3	3
CO4	1	1	1	1
Avg	2.00	2.25	2.25	2.00



IMS Engineering College, Ghaziabad

Sub Code	KNC-502
Sub. Name	INDIAN TRADITIONS, CULTURAL AND SOCIETY

COURSE OUTCOMES		Bloom's Level
CO1	The course aims at imparting basic principles of thought process, reasoning and inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.	K1, K2
CO2	To enable the students to understand the importance of our surroundings and encourage the students to contribute towards sustainable development.	K1, K2
CO3	To sensitize students towards issues related to 'Indian' culture, tradition and its composite character.	K2, K3
CO4	To make students aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.	K2, K3
CO5	To acquaint students with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system.	K1, K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				3		3		2				2
CO2						3	3	2				
CO3			2			3	3	1	3			
CO4			2			3	3	2	3			1
CO5			2			3	3	2	3			2
Avg			2	3		3	3	1.8	3			1.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1				2
CO2				
CO3				
CO4				2
CO5				2
Avg				2



IMS Engineering College, Ghaziabad

SEMESTER- VI													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCS601	Software Engineering	3	1	0	30	20	50		100		150	4
2	KCS602	Web Technology	3	1	0	30	20	50		100		150	4
3	KCS603	Computer Networks	3	1	0	30	20	50		100		150	4
4	Deptt. Elective-III	Departmental Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I [Annexure - B(iv)]	3	0	0	30	20	50		100		150	3
6	KCS651	Software Engineering Lab	0	0	2				25		25	50	1
7	KCS652	Web Technology Lab	0	0	2				25		25	50	1
8	KCS653	Computer Networks Lab	0	0	2				25		25	50	1
9	KNC601/ KNC602	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			
10		MOOCs (Essential for Hons. Degree)											
		Total	0	3	6						900	21	

Departmental Elective-I

1. KCS-051 Data Analytics
2. KCS-052 Web Designing
3. KCS-053 Computer Graphics
4. KCS-054 Object Oriented System Design

Departmental Elective-II

1. KCS-055 Machine Learning Techniques
2. KCS-056 Application of Soft Computing
3. KCS-057 Augmented & Virtual Reality
4. KCS-058 Human Computer Interface

Departmental Elective-III

1. KCS-061 Big Data
2. KCS-062 Image Processing
3. KCS-063 Real Time Systems
4. KCS-064 Data Compression



IMS Engineering College, Ghaziabad

B.Tech. VI Semester (2020-21)

OPEN ELECTIVE-I

KOE060	IDEA TO BUSINESS MODEL
KOE061	REAL TIME SYSTEMS
KOE062	EMBEDDED SYSTEM
KOE063	INTRODUCTION TO MEMS
KOE064	OBJECT ORIENTED PROGRAMMING
KOE065	COMPUTER BASED NUMERICAL TECHNIQUES
KOE066	GIS & REMOTE SENSING
KOE067	BASICS OF DATA BASE MANAGEMENT SYSTEM
KOE068	SOFTWARE PROJECT MANAGEMENT
KOE069	UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY- HUMAN ASPIRATIONS AND ITS FULFILLMENT



IMS Engineering College, Ghaziabad

Sub Code	KCS-601
Sub. Name	Software Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Explain various software characteristics and analyse different software Development Models.	K1, K2
CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards.	K1, K2
CO3	Compare and contrast various methods for software design	K2, K3
CO4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing.	K3
CO5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis.	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1							1	2
CO2	2	2	2	2	1	1					1	3
CO3	2	2	3	2	2	1					2	3
CO4	2	2	2	2	1	1					2	3
CO5	2	3	3	1	1	1					2	3
Avg	2.2	2.2	2.4	1.6	1.25	1					1.6	2.8

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2	1	1
CO2	1	3	2	1
CO3	1	3	2	1
CO4		1	3	1
CO5	2	1	2	2
Avg	1.25	2	2	1.2



IMS Engineering College, Ghaziabad

Sub Code	KCS 602
Sub. Name	Web Technology

COURSE OUTCOMES		Bloom's Level
CO1	Explain web development Strategies and Protocols governing Web.	K1, K2
CO2	Develop Java programs for window/web-based applications.	K2, K3
CO3	Design web pages using HTML, XML, CSS and JavaScript.	K2, K3
CO4	Creation of client-server environment using socket programming	K1, K2
CO5	Building enterprise level applications and manipulate web databases using JDBC	K3, K4
CO6	Design interactive web applications using Servlets and JSP	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1				1	1		2	1	1	1	2
CO2	1	3	3	2	2			1	2	2	2	3
CO3	1	1	2	2	2	1		2	2	2	2	2
CO4	1	2	2	2	2	1		2	2	2	2	2
CO5	1	2	2	2	3	1		2	3	2	2	3
CO6	1	2	2	2	3	1		2	3	2	2	3
Avg	1	2	2.2	2	2.17	1		1.8	2.17	1.8	1.8	2.5

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	1	1	1
CO2	1	2	2	3
CO3	1	2	2	3
CO4	1	2	2	3
CO5	1	2	2	3
CO6	1	2	2	3
Avg	1	1.8	1.8	2.7



IMS Engineering College, Ghaziabad

Sub Code	KCS603
Sub. Name	Computer Networks

COURSE OUTCOMES		Bloom's Level
CO1	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission	K1, K2
CO2	Apply channel allocation, framing, error and flow control techniques.	K3
CO3	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.	K2, K3
CO4	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism	K2, K3
CO5	Explain the functions offered by session and presentation layer and their Implementation	K2, K3
CO6	Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1								2
CO2	3	2	2	2	1						1	2
CO3	3	3	2	2	1				1	1	1	3
CO4	3	3	2	1							1	3
CO5	3	3	2	1							1	3
CO6	2	2	2									2
Avg	2.83	2.50	2.00	1.40	1.00				1.00	1.00	1.00	2.50

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2		2	1
CO2	1	1	1	1
CO3	2		2	1
CO4	2		1	1
CO5	2	1	2	2
CO6	1			
Avg	1.67	1.00	1.60	1.20



IMS Engineering College, Ghaziabad

Sub Code	KCS-061
Sub. Name	BIG DATA

COURSE OUTCOMES		Bloom's Level
CO1	Demonstrate knowledge of Big Data Analytics concepts and its applications in business.	K1, K2
CO2	Demonstrate functions and components of Map Reduce Framework and HDFS	K1, K2
CO3	Discuss Data Management concepts in NoSQL environment.	K2, K3
CO4	Explain process of developing Map Reduce based distributed processing applications	K3
CO5	Explain process of developing applications using HBASE, Hive, Pig et	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	2				2		3
CO2	2	2	3	3	2					2		2
CO3	2	2	2	3	2					2		3
CO4	3	2	3	2	2					2		3
CO5	1	1	1	1						2		2
Avg	2.2	1.8	2.2	2.2	2.25	2				2		2.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	3	2
CO2	3	2		1
CO3	2	2	1	1
CO4	2	2	2	1
CO5	2	2	1	2
Avg	2.4	2	1.75	1.4



IMS Engineering College, Ghaziabad

Sub Code	KCS062
Sub. Name	Image Processing

COURSE OUTCOMES		Bloom's Level
CO1	Explain the basic concepts of two-dimensional signal acquisition, sampling, quantization and color model.	K1, K2
CO2	Apply image processing techniques for image enhancement in both the spatial and frequency domains.	K2, K3
CO3	Apply and compare image restoration techniques in both spatial and frequency domain.	K2, K3
CO4	Compare edge based and region-based segmentation algorithms for ROI extraction.	K3, K4
CO5	Explain compression techniques and descriptors for image processing.	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2								2
CO2	3	2	2	2	1							2
CO3	3	2	2	2	1							2
CO4	3	3	2	2	2							3
CO5	3	3	3	1	1							3
Avg	3.00	2.40	2.20	1.80	1.25							2.40

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2		1	1
CO2	2	1	1	1
CO3	1	1	1	1
CO4	2	1	2	2
CO5	1	1	1	1
Avg	1.60	1.00	1.20	1.20



IMS Engineering College, Ghaziabad

Sub Code	KOE-064
Sub. Name	Object Oriented Programming

COURSE OUTCOMES		Bloom's Level
CO1	Understand the Basic concept of Object Orientation, object identity and Encapsulation.	K2
CO2	Understand the Basic concept of Basic Structural Modeling.	K2
CO3	Know the knowledge of Object oriented design, Object design.	K2, K3
CO4	Know the knowledge of C++ Basics	K2, K3
CO5	Understand the Basics of object and class in C++.	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2		2								
CO2	2		2	2								
CO3	2	2	2	2								
CO4	2		1									
CO5	2	2	2									
Avg	2	2	1.75	2								

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2			1
CO2	2			
CO3	2	2	2	2
CO4	2	2	2	2
CO5	2	2		2
Avg	2	2	2	1.75



IMS Engineering College, Ghaziabad

Sub Code	KCS-651
Sub. Name	Software Engineering Lab

COURSE OUTCOMES		Bloom's Level
CO1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement.	K2, K3
CO2	Identify different actors and use cases from a given problem statement and draw use case diagram to associate use cases with different types of relationship	K2, K3
CO3	Draw a class diagram after identifying classes and association among them	K4, K5
CO4	Graphically represent various UML diagrams, and associations among them and identify the logical sequence of activities undergoing in a system, and represent them pictorially	K4, K5
CO5	Able to use modern engineering tools for specification, design, implementation and testing	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1						1				1
CO2	3	3	2	2	2	2	1	1	1	1	1	3
CO3	3	3	3	3	2		1				1	3
CO4	2	3	2	2	2		1	1	1		2	3
CO5	3	3	3	3	2		1		1		2	3
Avg	2.6	2.6	2.5	2.5	2	2	1	1	1	1	1.5	2.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1			1
CO2	3	3	1	3
CO3	2	3	1	3
CO4	3	3	1	3
CO5	3	3	1	3
Avg	2.4	3	1	2.6



IMS Engineering College, Ghaziabad

Sub Code	KCS-652
Sub. Name	Web technology Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students must be able to learn basics of web technology	K2
CO2	Students must be able to understand the logic behind the experiment & demonstrate the outcomes effectively.	K3, K4
CO3	Students must be able to present the experiment & its results effectively in documentation.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1									
CO2	2	3	2									
CO3	3	2	1									
Avg	2	2	1.3									

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2	1	1
CO2	1	1	2	2
CO3	2	1	1	1
Avg	1.3	1.3	1.3	1.3



IMS Engineering College, Ghaziabad

Sub Code	KCS653
Sub. Name	Computer Networks Lab

COURSE OUTCOMES		Bloom's Level
CO1	Simulate different network topologies.	K3, K4
CO2	Implement various framing methods of Data Link Layer.	K3, K4
CO3	Implement various Error and flow control techniques	K3, K4
CO4	Implement network routing and addressing techniques.	K3, K4
CO5	Implement transport and security mechanisms.	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1								2
CO2	2	2	2									1
CO3	2	2	2									2
CO4	3	2	2	2							1	2
CO5	1	1	1									1
Avg	2.00	1.60	1.60	1.50							1.00	1.60

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2		1	
CO2	2	1	1	1
CO3	1		1	
CO4	2		2	1
CO5	1			1
Avg	1.60	1.00	1.25	1.00



IMS Engineering College, Ghaziabad

Sub Code	KNC-601
Sub. Name	CONSTITUTION OF INDIA, LAW AND ENGINEERING

COURSE OUTCOMES		Bloom's Level
CO1	To acquaint the students with legacies of constitutional development in India and help those to understand the most diversified legal document of India and philosophy behind it.	K1, K2
CO2	To make students aware of the theoretical and functional aspects of the Indian Parliamentary System.	K1, K2
CO3	To channelize students' thinking towards basic understanding of the legal concepts and its implications for engineers.	K2, K3
CO4	To acquaint students with latest intellectual property rights and innovation environment with related regulatory framework	K3, K4
CO5	To make students learn about role of engineering in business organizations and e-governance.	K1, K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				3		3		2				2
CO2						3	3	2				
CO3			2			3	3	1	3			
CO4			2			3	3	2	3			1
CO5			2			3	3	2	3			2
Avg			2	3		3	3	1.8	3			1.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1				2
CO2				
CO3				
CO4				2
CO5				2
Avg				2



B.Tech. (Computer Science and Engineering) VII SEMESTER

Sl. No.	Subject Code	Subject Name	L-T-P	Th/Lab Marks	Sessional		Total	Credit
				ESE	CT	TA		
1	Open Elective-1	Open Elective Course -1	3-0-0	70	20	10	100	3
2	CS Elective-3	Deptt Elective Course-3	3-0-0	70	20	10	100	3
3	CS Elective-4	Deptt Elective Course-4	3-1-0	70	20	10	100	4
4	RCS701	Distributed System	3-1-0	70	20	10	100	4
5	RCS702	Artificial Intelligence	3-0-0	70	20	10	100	3
6	RCS751	Distributed System Lab	0-0-2	50		50	100	1
7	RCS752	Artificial Intelligence Lab	0-0-2	50		50	100	1
8	RCS753	Industrial Training	0-0-3			100	100	2
9	RCS754	Project	0-0-6			200	200	3
	TOTAL			450	100	450	1000	24

B.TECH. VII SEMESTER 2020-21

REVISED OPEN ELECTIVE-I

1.	ROE070	HUMAN VALUES IN SANKHAY YOGA AND VEDANTA DARSAN
2.	ROE071	MODELLING AND SIMULATION OF DYNAMIC SYSTEMS
3.	ROE072	INTRODUCTION TO SMART GRID
4.	ROE073	CLOUD COMPUTING
5.	ROE074	UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY - HUMAN ASPIRATIONS AND ITS FULFILLMENT
6.	ROE075	AUTOMATION AND ROBOTICS
7.	ROE076	COMPUTERIZED PROCESS CONTROL
8.	ROE077	MODELING OF FIELD-EFFECT NANO DEVICES
9.	ROE078	QUALITY MANAGEMENT
10.	ROE079	GIS & REMOTE SENSING
11.	ROE080	HUMAN VALUES IN BUDDHA AND JAIN DARSHAN



DEPARTMENTAL ELECTIVES

CS-ELECTIVE -3:

1. RCS070 Embedded Systems
2. RCS071 Application of Soft Computing
3. RCS072 High Performance Computing
4. RCS073 Human Computer Interface

CS-ELECTIVE-4:

1. RCS075 Cloud Computing
2. RCS076 Blockchain Architecture Design
3. RCS077 Agile Software Development
4. RCS078 Augmented & Virtual Reality



IMS Engineering College, Ghaziabad

Sub Code	ROE-074
Sub. Name	UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY - HUMAN ASPIRATIONS AND ITS FULFILLMENT

COURSE OUTCOMES		Bloom's Level
CO1	To help the students having the clarity about human aspirations, goal, activities and purpose of life.	K1,K3
CO2	To facilitate the competence to understand the harmony in nature/existence and Participation of human being in the nature/existence.	K2
CO3	To help the students to develop the understanding of human tradition and its various components	K2,K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						1		1				1
CO2						2						1
CO3								1				2
Avg						1.5		1				1.33

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2	1	
CO2	1	1	1	1
CO3	1	1	1	1
Avg	1	1.33333	1	1



IMS Engineering College, Ghaziabad

Sub Code	RCS-071
Sub. Name	Application of Soft Computing

COURSE OUTCOMES		Bloom's Level
CO1	Recognize the feasibility of applying a soft computing methodology for a particular problem	K2, K4
CO2	Understand the concepts and techniques of soft computing and foster their abilities in designing and implementing soft computing based solutions for real-world and engineering problems.	K2, K4, K6
CO3	Apply neural networks to pattern classification and regression problems and compare solutions by various soft computing approaches for a given problem.	K3, K5
CO4	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems	K3, K4
CO5	Apply genetic algorithms to combinatorial optimization problems	K3, K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		3								2
CO2	3		3	2		2	1					2
CO3	3	3	2	3							2	2
CO4	3		1					1			2	2
CO5	3	3	2								2	2
Avg	3	3	2	2.66		2	1	1			2	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3			1
CO2	3			
CO3	2	3	2	3
CO4	2	3	3	3
CO5	2	3		3
Avg	2.4	3	2.5	2.5



IMS Engineering College, Ghaziabad

Sub Code	RCS-075
Sub. Name	Cloud Computing

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to understand the fundamental of cloud computing and demonstrate characteristics of cloud computing.	K2
CO2	Student will be able to describe the concept of virtualization and implement their mechanism with service oriented architecture.	K1
CO3	Student will be able to discuss cloud architecture and Organize cloud data in Public, Private and Hybrid Clouds on cloud storage.	K1,K5
CO4	Student will be able to examine the cloud data by Resource provisioning methods and implement global security on it.	K3,K5
CO5	Student will be able to analyze the virtual box and use programming environment for Google app engine.	K4,K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1									1
CO2	2	2	2	1								1
CO3	2	3	3	2								2
CO4	1	1	1									1
CO5	2	3	3	2								2
Avg	1.8	2.2	2	1.67								1.4

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1		1	1
CO2	1			
CO3	1	1	1	
CO4	1			
CO5	1	2	1	1
Avg	1	1.5	1	1



IMS Engineering College, Ghaziabad

Sub Code	RCS-701
Sub. Name	Distributed Systems

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to define the principles and architectural models of Distributed Systems in order to determine the global system state and identify the clock models used in distributed systems.	K1
CO2	Students will be able to identify the requirements of Mutual Exclusion and describe various deadlock detection strategies.	K1
CO3	Students will be able to illustrate the System models of Agreement Problems and application of these agreement protocols in real life problems like Atomic commit in DDBS.	K3
CO4	Students will be able to classify the failure recovery (forward/backward) in concurrent systems and formulating algorithms for achieving fault tolerance in distributed systems.	K4
CO5	Students will be able to compare various methods used for attaining concurrency control in distributed transactions and resolving the distributed deadlocks in transactions.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2					2	1		3
CO2	2	3	2	2					2	1		2
CO3	2	2	2	2					2	1		2
CO4	2	2	2	1					2	1		2
CO5	2	2	1	1					2	1		2
Avg	2	2.2	1.8	1.6					2	1		2.2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	3	
CO2	2	2	3	
CO3	3	2	3	
CO4	2	2	3	
CO5	2	2	3	
Avg	2.4	2	3	



IMS Engineering College, Ghaziabad

Sub Code	RCS 702
Sub. Name	Artificial Intelligence

COURSE OUTCOMES		Bloom's Level
CO1	Understanding the fundamental aspects of AI and Intelligent agents in AI.	K2
CO2	Designing various AI searching algorithm for real life problems.	K6
CO3	Implementing knowledge representation schemes for predicates used in knowledge based system	K3
CO4	Understanding the Machine learning concepts & its fundamental algorithms.	K2
CO5	Discussing pattern recognition techniques & its role in AI.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1							1	2
CO2	3	3	2	2	3						1	2
CO3	3	3	2	2	3						1	2
CO4	3	2	3	3							1	3
CO5	3	2	3	1							1	3
Avg	2.6	2.2	2.2	1.8	3						1	2.4

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	
CO2	3	3	3	1
CO3	3	3	3	1
CO4	2	2	1	3
CO5	2	1	2	3
Avg	2.4	2	2	2



IMS Engineering College, Ghaziabad

Sub Code	RCS-751
Sub. Name	Distributed Systems lab

COURSE OUTCOMES		Bloom's Level
CO1	Students are able to perform Resource allocation and deadlock detection and avoidance techniques in the distributed system.	K4
CO2	Students are able to understand remote procedure call for various applications.	K2
CO3	Students are able to understand IPC mechanism in distributed system.	K2
CO4	Students are able to Design and build application programs on distributed systems.	K5, K6
CO5	Students are able to design and build newer distributed file systems for any OS.	K5, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		3	3	3					2	2
CO2	3	3		3	3	3					2	2
CO3	3	3		3	3	3					2	2
CO4	3	3		3	3	3					2	2
CO5	3	3		3	3	3					2	2
Avg	3	3		3	3	3					2	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	3	
CO2	2	2	3	
CO3	3	2	3	
CO4	2	2	3	
CO5	2	2	3	
Avg	2.4	2	3	



IMS Engineering College, Ghaziabad

Sub Code	RCS752
Sub. Name	Artificial Intelligence Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students must study and perform the experiments using Prolog language in assigned labs.	K1
CO2	Students must be able to understand the logic behind different AI programs & demonstrate the outcomes effectively using Prolog.	K2
CO3	Students must be able to explain the outcomes of programs using Prolog and effectively document the practicals in lab files.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3				3							3
CO2	3	2		3	3					3		3
CO3	3	2		3	3					3		3
Avg	3	2		3	3					3		3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	3	3	
CO2	2	3	3	3
CO3	2	3	3	3
Avg	2	3	3	3



IMS Engineering College, Ghaziabad

Sub Code	RCS 753
Sub. Name	Industrial training

COURSE OUTCOMES		Bloom's Level
CO1	Students must be able to demonstrate their learning effectively through presentation.	K2,K3,K5
CO2	Students are expected to apply & demonstrate their learning through a meaningful project.	K3, K6
CO3	Students must learn to demonstrate their learning & work done through effective documentation in the form of project report.	K1, K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2	2	2	1	1	1	2	3	3	2
CO2	2	3	3	3	2			2	3	3	3	3
CO3	1	2	2	2	2	1	1	1	2	3	3	2
Avg	1.3	2.3	2.3	2.3	2	1	1	1.3	2.3	3	3	2.3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	2
CO2	3	3	2	3
CO3	2	1	1	2
Avg	2.3	1.6	1.3	2.3



IMS Engineering College, Ghaziabad

Sub Code	RCS754
Sub. Name	Project

COURSE OUTCOMES		Bloom's Level
CO1	To identify a real world problem in a clear and concise manner demonstrating a sound technical knowledge in form of synopsis covering problem understanding, project objectives, expected features and results.	K1, K2
CO2	To identify and summarize an appropriate list of literature review, analyse previous researchers' work and relate them to current project.	K2
CO3	To understand how to collect primary data from the field according to the requirements, analyse the collected data in form of tables, bar chats, pie charts, etc. and create a paper model for the project.	K2
CO4	To undertake problem identification, formulation and design engineering solutions to complex problems utilising a systems approach.	K2, K3
CO5	To validate the results with defined project objectives through standard or benchmark procedures.	K3
CO6	To present the project outlining the approach and expected results using good oral and written presentation skills thereby producing a written project report that record and compile work done throughout the project.	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2		2		1	1	1	2	1	2	2
CO2	1	3	1	2		1			2			1
CO3	2	2	2	2	2	1	1		1		2	2
CO4	2	2	3	1	1	1			2		2	2
CO5	2	2	3	2	2	1	1	1	2	1	3	2
CO6	2	2	2	1	1	1	1	1	2	3	3	2
Avg	1.67	2.17	2.20	1.67	1.50	1.00	1.00	1.00	1.83	1.67	2.40	1.83

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	1	2
CO2	1	3	1	2
CO3	1	3	2	2
CO4	2	2	2	1
CO5	1	3	2	2
CO6	3	2	2	2
Avg	1.83	2.33	1.67	1.83



B.Tech. (Computer Science and Engineering) VIII SEMESTER

Sl. No.	Subject Code	Subject Name	L-T-P	Th/Lab Marks	Sessional		Total	Credit
				ESE	CT	TA		
1	Open Elective-2	Open Elective Course-2	3--0--0	70	20	10	100	3
2	CS Elective-5	Deptt Elective Course-5	3--1--0	70	20	10	100	4
3	CS Elective-6	Deptt Elective Course-6	3--0--0	70	20	10	100	3
4	RCS851	Seminar	0--0--3			100	100	2
5	RCS852	Project	0--0--12	350		250	600	12
TOTAL				560	60	380	1000	24

Open Electives II (VIII Semester)		
Sl. No.	Subject Code	Name of Elective(s)
1	ROE081	Digital and Social Media Marketing
2	ROE082	Entrepreneurship Development
3	ROE083	Machine Learning
4	ROE084	Micro and Smart Systems
5	ROE085	Operations Research
6	ROE086	Renewable Energy Resources
7	ROE087	*Human Values in Madhyasth Darshan
8	ROE088	*Values, Relationship & Ethical Human Conduct-For a Happy & Harmonious Society



CS-ELECTIVE-5:

1. RCS080 Machine Learning (Mapping with MOOCS: https://onlinecourses.nptel.ac.in/noc17_cs17/preview
https://onlinecourses.nptel.ac.in/noc17_cs26/preview)
2. RCS081 Game Programming
3. RCS082 Image Processing (Mapping with MOOCS: https://onlinecourses.nptel.ac.in/noc18_ec40/preview
<https://nptel.ac.in/courses/106105032/>)
4. RCS083 Parallel and Distributed Computing (Mapping with MOOCS: <https://nptel.ac.in/courses/106102114/>,
<https://nptel.ac.in/courses/106104024/>)

CS-ELECTIVE-6:

1. RCS085 Speech Natural language processing (Mapping with MOOCS: <https://nptel.ac.in/courses/106101007/>
<https://nptel.ac.in/courses/106105158/>)
2. RCS086 Deep Learning (Mapping with MOOCS: https://onlinecourses.nptel.ac.in/noc18_cs41/preview)
3. RCS087 Data Compression
4. RCS088 Quantum Computing (Mapping with MOOCS: https://onlinecourses.nptel.ac.in/noc18_cy07)



IMS Engineering College, Ghaziabad

Sub Code	ROE-081
Sub. Name	Digital and Social Media Marketing

COURSE OUTCOMES		Bloom's Level
CO1	Students will develop an understanding of digital and social media marketing practices.	K3
CO2	Students will develop understanding of the social media platforms.	K5
CO3	Students will acquire the skill to acquire and engage consumers online.	K3, K6
CO4	Students will develop understanding of building organizational competency by way of digital marketing practices and cost considerations.	K6
CO5	Students will develop understanding of the latest digital practices for marketing and promotion.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				3	3		3	1		2		2
CO2			2	2				1	1		3	2
CO3					1			2				1
CO4						2		3	2			2
CO5								2				2
Avg			2	2.5	2	2	3	1.8	1.5	2	3	1.8

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1				
CO2		2		2
CO3				2
CO4		2		
CO5		2		2
Avg		2		2



IMS Engineering College, Ghaziabad

Sub Code	RCS-080
Sub. Name	Machine Learning

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to apply the fundamental concepts of machine learning, well defined learning problems and its associated algorithms.	K3,K4
CO2	Students will be able to apply and analyse Decision Tree Learning and Artificial Neural network.	K2, K3
CO3	Students will be able to learn the Evaluation of Hypothesis Theory, Bayesian Learning and Bayesian Network.	K2
CO4	Students will be able to understand the concept of Computational Learning Theory and Its associated algorithms.	K5
CO5	Students will be able analyse and apply the concept of Genetic Algorithm and its role in Reinforcement Machine Learning.	K3,K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	3	1	2	2	1	1	1	1	1
CO2	3	3	2	2	2	2	1	1	1	2	2	1
CO3	2	2	1	1	1	1	1	1	1	1	1	1
CO4	2	2	1	2	1	1	1	1	1	1	1	2
CO5	3	3	2	2	2	2	1	1	1	2	2	1
Avg	2.6	2.6	1.4	2	1.4	1.6	1.2	1	1	1	1.4	1.2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	1	1
CO2	2	2	2	1
CO3	2	1	2	1
CO4	2	2	2	2
CO5	3	2	3	2
Avg	2.4	1.6	2	1.4



IMS Engineering College, Ghaziabad

Sub Code	RCS082
Sub. Name	IMAGE PROCESSING

Course Outcome (CO)		Bloom's Level
CO1	Explain the basic concepts of two-dimensional signal acquisition, sampling, quantization and color model.	K1, K2
CO2	Apply image processing techniques for image enhancement in both the spatial and frequency domains.	K2, K3
CO3	Apply and compare image restoration techniques in both spatial and frequency domain.	K2, K3
CO4	Compare edge based and region based segmentation algorithms for ROI extraction.	K3, K4
CO5	Explain compression techniques and descriptors for image processing.	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1									1
CO2	2	2	2	1								1
CO3	2	3	3	2								2
CO4	1	1	1									1
CO5	2	3	3	2								2
Avg	1.8	2.2	2	1.67								1.4

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1		1	1
CO2	1			
CO3	1	1	1	
CO4	1			
CO5	1	2	1	1
Avg	1	1.5	1	1



IMS Engineering College, Ghaziabad

Sub Code	RCS086
Sub. Name	Deep Learning

COURSE OUTCOMES		Bloom's Level
CO1	Learn and Understand the basic concepts of Machine Learning, Linear Models and Neural Networks.	K1, K2
CO2	Understand the fundamentals of deep learning and its various networks.	K2
CO3	Learn and Understand various Dimensionality Reduction Models.	K1, K2
CO4	Analyze and Remember optimization and generalisation models of deep learning.	K1, K4
CO5	Apply knowledge and understanding of deep neural networks for various applications.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		1								3
CO2	3	2	1	1								3
CO3	3	2	2	1								3
CO4	3	3	1	1								3
CO5	2	3	3	3			2					3
Avg	2.80	2.40	1.75	1.40			2					3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1			3	1
CO2			3	1
CO3			3	1
CO4			3	2
CO5		1	1	3
Avg		1	2.60	1.60



IMS Engineering College, Ghaziabad

Sub Code	RCS 087
Sub. Name	Data Compression

COURSE OUTCOMES		Bloom's Level
CO1	Describe the evolution and fundamental concepts of Data Compression and Coding Techniques. .	K1, K2
CO2	Apply and compare different static coding techniques (Huffman & Arithmetic coding) for text compression.	K2, K3
CO3	Apply and compare different dynamic coding techniques (Dictionary Technique) for text compression.	K2, K3
CO4	Evaluate the performance of predictive coding technique for Image Compression.	K2, K3
CO5	Apply and compare different Quantization Techniques for Image Compression.	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2		2		2	2		2
CO2	3	3	3	3	2	2	2		2	2		2
CO3	3	2	3	3	2	2	2		2			
CO4	3	2	2	3	2	2	2		2	2		2
CO5	2	3	3	2	3	2	2		2			
Avg	2.8	2.6	2.8	2.8	2.2	2	2		2	2		2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1		1	1	2
CO2		2	3	2
CO3		2	1	2
CO4		2	2	2
CO5		2	2	2
Avg		1.8	1.8	2



IMS Engineering College, Ghaziabad

Sub Code	RCS851
Sub. Name	Seminar

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to Identify, understand, discuss and solve current, real-world issues.	K1, K2
CO2	Student will be able to collaborate with others as they work on intellectual projects.	K2
CO3	Student will be able to speak and debate with an appreciation for complex social, cultural and technical sensibilities.	K3
CO4	Student will be able to increase self-motivation, personal responsibility, and understanding of his or her role in being an informed participant in the educational and organizational process.	K2, K3
CO5	Student will be able to construct a paper consistent with expectations of the discipline, including an appropriate organization, style, voice, and tone.	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1						1				1
CO2	3	3	2	2	2	2	1	1	1	1	1	3
CO3	3	3	3	3	2		1				1	3
CO4	2	3	2	2	2		1	1	1		2	3
CO5	3	3	3	3	2		1		1		2	3
Avg	2.60	2.60	2.50	2.50	2.00	2.00	1.00	1.00	1.00	1.00	1.50	2.60

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1			1
CO2	3	3	1	3
CO3	2	3	1	3
CO4	3	3	1	3
CO5	3	3	1	3
Avg	2.40	3.00	1.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	RCS 852
Sub. Name	Project

COURSE OUTCOMES		Bloom's Level
CO1	The students can effectively collaborate in groups to achieve a common goal.	K2
CO2	Students can improve their capacity to communicate effectively with a diverse group of people.	K3, K5
CO3	Students learn how to design a software or hardware product by learning technical skills, conducting research, and responding ethically.	K1, K3, K4
CO4	The students use what they've learned to create and implement a business plan for an entrepreneurial venture.	K3, K6
CO5	Students build self-learning skills and apply them to lifelong learning.	K3, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			3	3	3	2			3	3	3	3
CO2									3	3	2	3
CO3	3	3	3	3	3	2		3	3	3	3	3
CO4	3	3	3	3	3		2	3	2	3	3	2
CO5	3	3	3	2	3		2		3		2	3
Avg	3	3	3	3	3	2	2	3	2.8	3	2.6	2.8

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	2
CO2	2	3	3	2
CO3	3	3	1	2
CO4	3	3	2	2
CO5	3	3	2	2
Avg	2.8	2.8	1.8	2



IMS Engineering College, Ghaziabad

Department of Computer Science

2021-22



IMS Engineering College, Ghaziabad

Course Outcomes (CO)
mapping with
Programme Outcomes
(PO)
and
Programme Specific
Outcomes (PSO)



Institute Vision and Mission

Vision

Our vision is to impart Vibrant, Innovative and Global Education to make IMS the world leader in terms of Excellence of Education, Research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a Centre of Excellence in Technical and Management Education.
- To inculcate in its students the qualities of Leadership, Professionalism, Executive Competence and Corporate understanding.
- To imbibe and enhance Human Values, Ethics and Morals in our students.
- To transform students into Globally Competitive Professionals



Department Vision and Mission

Vision

To be recognized as a Centre of Excellence imparting quality education and creating new opportunities for students to meet the challenges of technological development in Computer Science & Engineering.

Mission

- To promote technical proficiency by adopting effective teaching learning processes.
- To provide environment & opportunity for students to bring out their inherent talents for all round development.
- To promote latest technologies in Computer Science & Engineering and across disciplines in order to serve the needs of Industry, Government, Society, and the scientific community.
- To educate students to be Successful, Ethical and Effective problem-solvers and Life-Long learners who will contribute positively to the society.



Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Program Educational Objectives

1. Graduates of the program will be able to apply fundamental principles of engineering in problem solving and understand the role of computing in multiple disciplines.
2. Graduates will learn to apply various computational techniques & tools for developing solutions & projects in real world.
3. Be employed as computer science professionals beyond entry-level positions or be making satisfactory progress in graduate programs.
4. Demonstrate that they can function, communicate, collaborate and continue to learn effectively as ethically and socially responsible computer science professionals.

Program Specific Outcomes (PSO)

1. Foundation of Computer System: Ability to understand the principles and working of computer systems.
2. Foundations of Software development: Possess professional skills and knowledge of software design process. Familiarity and practical competence with a broad range of programming language and open-source platforms.
3. Foundation of mathematical concepts: Ability to apply mathematical methodologies to solve computation task, model real world problem using appropriate data structure and suitable algorithm.
4. Applications of Computing and Research Ability: Ability to use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations.



IMS Engineering College, Ghaziabad

B.TECH (COMPUTER SCIENCE AND ENGINEERING)

SEMESTER- III

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KOE031-38/ KAS302	Engineering Science Course/Maths IV	3	1	0	30	20	50		100		150	4
2	KAS301/ KVE 301	Technical Communication/Universal Human values	2	1	0	30	20	50		100		150	3
			3	0	0								
3	KCS301	Data Structure	3	1	0	30	20	50		100		150	4
4	KCS302	Computer Organization and Architecture	3	1	0	30	20	50		100		150	4
5	KCS303	Discrete Structures & Theory of Logic	3	0	0	30	20	50		100		150	3
6	KCS351	Data Structures Using C Lab	0	0	2				25		25	50	1
7	KCS352	Computer Organization Lab	0	0	2				25		25	50	1
8	KCS353	Discrete Structure & Logic Lab	0	0	2				25		25	50	1
9	KCS354	Mini Project or Internship Assessment*	0	0	2			50				50	1
10	KNC301/ KNC302	Computer System Security/Python Programming	2	0	0	15	10	25		50			0
11		MOOCs (Essential for Hons. Degree)											
		Total										950	22

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.



IMS Engineering College, Ghaziabad

Sub Code	KAS-302 (201)
Sub. Name	Engineering Science

COURSE OUTCOMES		Bloom's Level
201.1	The students will be able to learn the idea of partial differentiation and types of partial differential equations	K1 & K3
201.2	The students will be able to learn the idea of classification of second partial differential equations, wave, heat equation and transmission lines	K4 & K5
201.3	The students will be able to learn the basic ideas of statistics including measures of central tendency, correlation, regression and their properties.	K2
201.4	The students will be able to learn the ideas of probability and random variables and various discrete and continuous probability distributions and their properties.	K1 & K5
201.5	The students will be able to learn the statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.	K3 & K6

CO-PO Matrix												
Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO9	PO10	PO11	PO12
201.2	2	2	-	-	1	-	1	-	-	1	1	-
201.2	2	2	1	-	-	-	1	-	-	-	1	1
201.3	2	2	1	1	1	-	-	-	1	1	1	1
201.4	2	2	-	1	1	-	-	-	-	-	1	1
201.5	2	2	1	2	1	-	1	-	1	1	1	1
201	2	2	1	1.33	1		1		1	1	1	1

CO-PSO Matrix				
Cos	PSO 1	PSO2	PSO3	PSO4
201.1	1	-	1	-
201.2	1	-	2	1
201.3	1	-	1	-
201.4	1	1	1	-
201.5	1	1	2	1
201	1	1	1.4	1



IMS Engineering College, Ghaziabad

Sub Code	KAS 301 (202)
Sub. Name	Universal Human Values

COURSE OUTCOMES		Bloom's Level
202.1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.	K2
202.2	Student will utilize the technical writing for Technical communication and its exposure in various dimensions.	K2
202.3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.	K2
202.4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.	K6
202.5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
202.1	1	1	2		1	2	1	1	3	3	2	1
202.2	1	2	3		3	2				3	2	3
202.3	1	2	3		3	2	1	2	3	3	2	3
202.4	2	2	3	1	3	3		1	3	3	3	3
202.5	1	1	3	1	1		3	3	3	3	1	3
202	1.2	1.6	2.8	1	2.2	2.25	1.67	1.75	3	3	2	2.6

CO-PSO Matrix				
Cos	PSO1	PSO2	PSO3	PSO4
202.1		2		3
202.2		1		3
202.3	2			3
202.4	1	3		3
202.5				1
202	1.5	2		2.6



IMS Engineering College, Ghaziabad

Sub Code	KCS-301 (203)
Sub. Name	Data Structure

COURSE OUTCOMES		Bloom's Level
203.1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.	K1, K2
203.2	Discuss the computational efficiency of the sorting and searching algorithms.	K2
203.3	Implementation of Trees and Graphs and perform various operations on these data structure.	K3
203.4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion.	K4
203.5	Identify the alternative implementations of data structures with respect to its performance to solve a real-world problem.	K5, K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
203.1	1	1	2	2	1	1						3
203.2	2	2	3	2	1							3
203.3	1	2	2	2	1	2						3
203.4	2	2	2	2	1							3
203.5	2	2	3	2	1	2						2
203	1.6	1.8	2.4	2	1	1.67						2.8

CO-PSO Matrix				
COs	PSO 1	PSO2	PSO3	PSO4
203.1	1	2	2	
203.2	1	3	2	
203.3	1	2	2	2
203.4	1	2	2	2
203.5	1	1	2	2
203	1	2	2	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-302 (204)
Sub. Name	Computer Organization & Architecture

COURSE OUTCOMES		Bloom's Level
204.1	Student will be able to study of the basic structure and operation of a digital computer system.	K1, K2
204.2	Student will be able to analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating point arithmetic operations.	K2, K4
204.3	Student will be able to implement control unit techniques and the concept of Pipelining	K3
204.4	Student will be able to understand the hierarchical memory system, cache memories and virtual memory	K2
204.5	Student will be able to understand the different ways of communicating with I/O devices and standard I/O interfaces	K2, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
204.1	2	2	1	1	-	-	-	-	-	-	-	1
204.2	3	3	3	2	2	-	1	-	-	-	-	3
204.3	3	3	3	3	2	1	1	-	-	-	-	3
204.4	3	3	3	3	2	1	1	-	-	-	-	3
204.5	3	3	3	3	2	1	1	-	-	-	-	3
204	2.8	2.8	2.6	2.4	2	1	1	-	-	-	-	2.6

CO-PSO Matrix				
COs	PSO 1	PSO 2	PSO3	PSO4
204.1	2	-	3	1
204.2	2	1	3	2
204.3	2	-	3	2
204.4	3	1	3	3
204.5	3	-	2	2
204	2.4	1	2.8	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-303 (205)
Sub. Name	Discrete Structures and Theory of logic

COURSE OUTCOMES		Bloom's Level
205.1	Write an argument using logical notation and determine if the argument is or is not valid.	K3,K4
205.2	Understand the basic principles of sets and operations in sets.	K1,K2
205.3	Demonstrate an understanding of relations and functions and be able to determine their properties.	K3
205.4	Demonstrate different traversal methods for trees and graphs	K1,K4
205.5	Model problems in Computer Science using graphs and trees.	K2,K6

CO-PO Matrix												
Course Outcome	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
205.1	2	1										1
205.2	1	3		2								1
205.3	3	2	2									1
205.4	3	2	2	1								2
205.5	3	2	1	1	3							1
205	2.4	2	1.67	1.33	3							1.2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
205.1	2	1		
205.2		2	1	
205.3		3	3	
205.4		3	3	1
205.5		3	3	2
205	2	2.4	2.5	1.5



IMS Engineering College, Ghaziabad

Sub Code	KCS-351 (206)
Sub. Name	Data Structure Using C Lab

COURSE OUTCOMES		Bloom's Level
206.1	Interpret and compute asymptotic notations of an algorithm to analyze the consumption of resources (time/space).	K2, K5
206.2	Exemplify and implement stack, queue and list ADT, tree and graph to manage the memory using static and dynamic allocations.	K3
206.3	Implement binary search tree to design applications like expression trees.	K5
206.4	Identify, model, solve and develop code for real life problems like shortest path and MST using graph theory.	K1
206.5	Develop and compare the comparison-based search algorithms and sorting Algorithms.	K6
206.6	Identify appropriate data structure and algorithm for a given contextual problem and develop in C.	K1

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
206.1	2	3	3	2	1	1					1	3
206.2	2	3	3	2	1	1					1	3
206.3	3	2	3	2	1	1					1	2
206.4	3	2	3	2	1	1					1	3
206.5	2	3	3	2	1	1					1	2
206.6	2	3	3	2	1	1					1	2
206	2.3333	2.67	3	2	1	1					1	2.5

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
206.1	3	3	1	2
206.2	3	3	1	2
206.3	3	3	1	2
206.4	3	3	3	2
206.5	3	3	1	2
206.6	3	3	1	2
206	3	3	1.33	2



IMS Engineering College, Ghaziabad

Sub Code	KCS-352 (207)
Sub. Name	Computer Organization Lab

COURSE OUTCOMES		Bloom's Level
207.1	Define, Apply and Design basic digital circuits	K1, K3, K6
207.2	Discuss, Design and Calculate 8 bits I/O, ALU and RTL	K2, K3, K6
207.3	Explain, apply and design the concept of control unit and memory unit	K2, K3, K6
207.4	Define and design algorithm using simulators	K1, K6

CO-PO Matrix												
Course Outcome	PO1	PO 2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
207.1	1	2										1
207.2	1	2	1									1
207.3	1	2	1									1
207.4	1	2	1	1								1
207	1.00	2.00	1.00	1.00								1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
207.1	1	1		1
207.2	1	1		1
207.3	1	1		1
207.4	1	1	1	1
207	1.00	1.00	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KCS-353 (208)
Sub. Name	Discrete Structures and Theory of logic lab

COURSE OUTCOMES		Bloom's Level
208.1	Students would be having understanding of working with a mathematical tool Maple	K2
208.2	Students would be able to perform programs of recursion, combinatorics and counting	K3
208.3	Students would be able to perform programs of set theory, set operations and probability	K3
208.4	Student would be able to implement classical mathematical problems like Birthday paradox based on pigeonhole principle.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
208.1	3	2	3	1						1		2
208.2	3	2	3	2	2					2		3
208.3	3	2	2	2	1	1					2	2
208.4	3	2	2	2	1	1						3
208	3.00	2.00	2.50	1.75	1.33	1.00				1.50	2.00	2.50

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
208.1	3	1	1	2
208.2	3	2	2	2
208.3	3	2	2	2
208.4	2	3	2	2
208	2.75	2.00	1.75	2.00



IMS Engineering College, Ghaziabad

Sub Code	KCS354 (209)
Sub. Name	Summer training/Internship/Mini Project

COURSE OUTCOMES		Bloom's Level
209.1	Students will be able to identify and present the objective and the work done during training	K1
209.2	Students will be able to apply the learned concept through design, analysis and development of mini project	K3
209.3	Students will be able to design and implementation of mini project during their training.	K3, K6
209.4	Students will be able to discuss the result/output and prepare a mini project report	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
209.1	1	1	1	1	1	1		1	1		1	1
209.2	2	2	1	1	1	1		1	1	1	1	1
209.3	2	3	3	2	2	1		1	2	2	3	2
209.4	1	2	1	2	1			1	2	1	1	1
209	1.50	2.00	1.50	1.50	1.25	1.00		1.00	1.50	1.33	1.50	1.25

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
209.1	1	2	1	
209.2	1	2	1	1
209.3	1	1	1	1
209.4	1	1		1
209	1.00	1.50	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KNC-302 (210)
Sub. Name	Computer System Security

COURSE OUTCOMES		Bloom's Level
210.1	Students will be able to describe the numbers, math functions, strings, list, tuples and dictionaries in python	K1
210.2	Students will be able to acquire the skills to apply different decision-making statements and functions in python	K3
210.3	Students will be able to interpret object-oriented programming in python	K5
210.4	Students will be able to develop skill to understand and summarize different file handling operations	K6
210.5	Students will be able to demonstrate the ability to design GUI applications in python and evaluate different database operations	K3

CO-PO Matrix												
Course Outcome	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
210.1	3	2	2	3	3	2	3				3	3
210.2	3	2	3	3	2	3	2				3	3
210.3	3	2	3	2	3	3	3				3	2
210.4	3	2	3	2	2	2	2				2	3
210.5	3	2	3		3	3	2				2	3
210	3.00	2.00	2.80	2.50	2.60	2.60	2.40				2.60	2.80

CO-PSO Matrix				
COs	PSO 1	PSO2	PSO3	PSO4
210.1	2	1	2	1
210.2	2	1	1	1
210.3	2	1	1	1
210.4	2	1	1	1
210.5	2	1	1	1
210	2.00	1.00	1.20	1.00



IMS Engineering College, Ghaziabad

SEMESTER- IV													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS402/ KOE041-48	Maths IV/Engg. Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS301	Universal Human Values/ Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3	KCS401	Operating Systems	3	0	0	30	20	50		100		150	3
4	KCS402	Theory of Automata and Formal Languages	3	1	0	30	20	50		100		150	4
5	KCS403	Microprocessor	3	1	0	30	20	50		100		150	4
6	KCS451	Operating Systems Lab	0	0	2				25		25	50	1
7	KCS452	Microprocessor Lab	0	0	2				25		25	50	1
8	KCS453	Python Language Programming Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming/Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											
		Total										900	21



IMS Engineering College, Ghaziabad

Sub Code	KAS-402 (211)
Sub. Name	Maths IV

COURSE OUTCOMES		Bloom's Knowledge Level
211.1	Student will be able to apply the use of sensors for measurement of displacement, force and pressure.	K3
211.2	Student will be able to employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	K2
211.3	Student will be able to demonstrate the use of virtual instrumentation in automation industries.	K3
211.4	Student will be able to identify and use data acquisition methods.	K1
211.5	Student will be able to comprehend intelligent instrumentation in industrial automation.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
211.1	2	1	1		2	2						2
211.2	1	2	1	1	2	2					1	2
211.3	2	2	2	2	3	1				1	1	2
211.4	1	1	1	2	3	1	1					2
211.5	2	2	1	2	3	1				1	1	2
211	1.60	1.60	1.20	1.75	2.60	1.40	1.00			1.00	1.00	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
211.1			3	2
211.2			2	3
211.3	1	1	2	1
211.4	2	2	2	3
211.5	2	2	1	3
211	1.67	1.67	2.00	2.40



IMS Engineering College, Ghaziabad

Sub Code	KAS-301 (212)
Sub. Name	Technical Communication

COURSE OUTCOMES		Bloom's Knowledge Level
212.1	Students who complete this course should be able to realize the importance & need of human values and value education to human being.	K2
212.2	Students should be able to realize the importance of self exploration in harmony of family.	K2
212.3	They should be able to understand and appreciate role of harmonious family in peaceful society.	K2
212.4	Students who complete this course should be able to investigate his/her self & make it suitable to society and existence.	K4
212.5	Students should be able to apply the ethical and human values in family, society, nature and professional life.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
212.1						3						2
212.2						3	2	2				
212.3						3	2		2			
212.4							2	2				
212.5							3	3				2
212						3	2.25	2.33	2			2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
212.1	3	2	1	
212.2	2	2	1	
212.3	2	1	1	
212.4	1	1	1	
212.5	1	1	1	
212	1.8	1.4	1	



IMS Engineering College, Ghaziabad

Sub Code	KCS-401 (213)
Sub. Name	Operating System

COURSE OUTCOMES		Bloom's Level
213.1	Understand the structure and functions of OS	K1, K2
213.2	Learn about Processes, Threads and Scheduling algorithms.	K1, K2
213.3	Understand the principles of concurrency and Deadlocks	K2
213.4	Learn various memory management scheme	K2
213.5	Study I/O management and File systems.	K2, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
213.1	1											1
213.2	2	1	1									2
213.3	2	2	2	1								2
213.4	2	1	1									1
213.5	2	2	2	1								2
213	1.8	1.5	1.5	1								1.6

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
213.1	2	1	1	2
213.2	1	2	2	2
213.3	2	2	2	2
213.4	2	2	1	2
213.5	2	2	2	2
213	1.8	1.8	1.6	2.0



IMS Engineering College, Ghaziabad

Sub Code	KCS402 (214)
Sub. Name	Theory of Automata and Formal Languages

Course Outcome (CO)		Bloom's Knowledge Level (KL)
214.1	Analyse and design finite automata, pushdown automata, Turingmachines, formal languages, and grammars	K4, K6
214.2	Analyse and design, Turing machines, formal languages, and grammars	K4, K6
214.3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving	K1, K5
214.4	Prove the basic results of the Theory of Computation.	K2, K3
214.5	State and explain the relevance of the Church-Turing thesis.	K1, K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
214.1	1	2	3	2								1
214.2	1	2	2	2								1
214.3	1	2	2	2								2
214.4	1	2	2	1								1
214.5	1	2	2	1								1
214	1	2	2.2	1.6								1.2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
214.1	1	1		2
214.2	1	1		2
214.3	1			2
214.4	1	1		2
214.5	1		1	1
214	1	1	1	1.8



IMS Engineering College, Ghaziabad

Sub Code	KCS 403 (215)
Sub. Name	Microprocessor

COURSE OUTCOMES		Bloom's Level
215.1	Apply a basic concept of digital fundamental to microprocessor-based computer system.	K3, K4
215.2	Analyze a detailed software and hardware structure of the microprocessor	K2, K4
215.3	Illustrate how the different peripherals (8085/8086) are interfaced with microprocessor	K3
215.4	Analyze the characteristics of Microprocessor	K4
215.5	Evaluate the data transfer information through serial and parallel ports	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
215.1	2	1		1	1	-	-	-	2	1	1	-
215.2	3	1	1	2	1	-	-	-	1	2	1	2
215.3	2	2	1	1	1	-	-	-	2	1	1	-
215.4	3	2	2	2	1	-	-	-	1	-	-	-
215.5	3	3	1	1	1	-	-	-	2	1	2	1
215	2.6	1.8	1.25	1.4	1	-	-	-	1.6	1.25	1.25	1.5

CO-PSO Matrix				
COs	PSO 1	PSO2	PSO3	PSO4
215.1	3	2	2	1
215.2	2	3	-	-
215.3	2	2	1	1
215.4	2	2	-	-
215.5	2	2	2	-
215	2.2	2.2	1.67	1



IMS Engineering College, Ghaziabad

Sub Code	KCS-451 (216)
Sub. Name	Operating System lab

COURSE OUTCOMES		Bloom's Level
216.1	Students will be able to design and interpret various CPU scheduling algorithm.	K5, K6
216.2	Students will be able to design, develop and implement programs for deadlock handling.	K3, K6
216.3	Students will be able to apply and analyse different page replacement algorithms.	K3, K4
216.4	Students will be able to develop and compare various disk scheduling algorithms	K2, K6

CO-PO Matrix												
Course Outcome	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
216.1	1	2	2						1			1
216.2	1	2	2	1					1			1
216.3	1	2	2						1			1
216.4	1	2	2						1			1
216	1	2	2	1					1			1

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
216.1	2	2	2	1
216.2	2	2	2	1
216.3	2	2	2	1
216.4	2	2	2	1
216	2	2	2	1



IMS Engineering College, Ghaziabad

Sub Code	KCS 452 (217)
Sub. Name	Microprocessor Lab

COURSE OUTCOMES		Bloom's Level
217.1	Student able to perform experiment of his own.	K3, K5
217.2	Student must able to understand the logic behind experiment and demonstrate the outcome effectively	K2, K4
217.3	Student must able to present the experiment with results effectively.	K3

CO-PO Matrix												
Course Outcome	PO 1	PO2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
217.1	2	1	3	2	-	-	-	-	3	-	-	3
217.2	2	3	2	3	-	-	-	-	1	3	-	3
217.3	1	1	1	1	-	-	-	-	-	1	-	3
217	1.67	1.67	2	2	-	-	-	-	2	2	-	3

CO-PSO Matrix				
COs	PSO 1	PSO2	PSO3	PSO4
217.1	2	-	2	-
217.2	2	-	3	-
217.3	2	-	2	-
217	2	-	2.33	-



IMS Engineering College, Ghaziabad

Sub Code	KCS453 (218)
Sub. Name	Python Language Programming Lab

COURSE OUTCOMES		Bloom's Level
218.1	Students will be able to describe the numbers, math functions, strings, list, tuples and dictionaries in python	K2
218.2	Students will be able to acquire the skills to apply different decision-making statements and functions in python	K2, K3
218.3	Students will be able to interpret object-oriented programming in python	K2, K3
218.4	Students will be able to develop skill to understand and summarize different file handling operations	K3, K4
218.5	Students will be able to demonstrate the ability to design GUI applications in python and evaluate different database operations	K3, K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
218.1	3	2	2	3	3	2	3				3	3
218.2	3	2	3	3	2	3	2				3	3
218.3	3	2	3	2	3	3	3				3	2
218.4	3	2	3	2	2	2	2				2	3
218.5	3	2	3		3	3	2				2	3
218	3.00	2.00	2.80	2.50	2.60	2.60	2.40				2.60	2.80

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
218.1	2	1	2	1
218.2	2	1	1	1
218.3	2	1	1	1
218.4	2	1	1	1
218.5	2	1	1	1
218	2.00	1.00	1.20	1.00



IMS Engineering College, Ghaziabad

Sub Code	KNC-402 (219)
Sub. Name	Python Programming

	COURSE OUTCOMES	Bloom's Level
219.1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	K3
219.2	To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threat	K3
219.3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.	K2, K3
219.4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios	K2
219.5	To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques.	K2, K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
219.1	2	2	1	1								2
219.2	2	2	3	1	1				1			2
219.3	2	2	2	2	1						1	2
219.4	2	2	2	2	1						1	2
219.5	2	2	2	2	1						1	2
219	2.00	2.00	2.00	1.60	1.00				1.00		1.00	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
219.1	3	3	1	2
219.2	2	2	1	1
219.3	2	2	1	1
219.4	2	2	1	1
219.5	2	2	1	1
219	2.20	2.20	1.00	1.20



IMS Engineering College, Ghaziabad

Department of Civil Engineering

2021-22



IMS Engineering College, Ghaziabad

Course Outcomes (CO)
mapping with
Programme Outcomes
(PO)
and
Programme Specific
Outcomes (PSO)



Institute Vision and Mission

Vision

Our vision is to impart vibrant innovative and global education and to make IMS the world leader in terms of excellence of education, research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a centre of excellence in technical and management education.
- To inculcate in its students, the qualities of leadership, professionalism, corporate understanding & executive competence.
- To imbibe & enhance human values, ethics & morals in our students.
- To transform students into globally competent professionals.



Department Vision and Mission

Vision

Our vision is to provide excellent education that creates the new opportunities for students to meet the current and future challenges of technological development in civil engineering.

Mission

- To provide students with a sound civil engineering education for a successful career.
- To impart quality education to the students and enhance their domain knowledge as well as soft skills to make them globally competitive civil engineers.
- Respond effectively to the needs of the industry with changing technology scenario.
- Encouraging culture of continuous teaching and learning process by adopting latest technology and methodology.
- To develop the professional ethics and human values for the welfare of society.



Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of



technological change.

Program Educational Objectives

1. To prepare students for successful career in industry that meet the needs of Indian and multinational companies.
2. To provide students with a sound foundation in the mathematical, scientific and engineering fundamentals necessary to formulate, solve and analyze engineering problems and to pursue higher studies.
3. To develop creative ability among students by utilizing their technical competence in design, manufacturing and product development.
4. To promote awareness in students for life-long learning and to introduce them about professional issues of civil engineering including ethics, global economy and emerging technologies.
5. To foster important job related skills such as improved oral and written communications and experience of working as a team.

Program Specific Outcomes (PSO)

1. Graduates shall have an ability to apply fundamental knowledge of mathematics, applied science, engineering and management for the solution of civil engineering problems.
2. Graduates shall have an ability to enhance their technical and professional skills to utilize their knowledge in specification, fabrication, testing and operation of basic civil systems/processes.
3. Graduates shall have an ability to apply learned principles to the design, analysis, development and implementation of advanced civil systems.



B. Tech (Civil Engineering)

3rd Semester

S.No	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KOE081-3B/KAS303	Engineering Science Course/Maths III	3	1	0	30	20	50		100		150	4
2	KAS301/KVE301	Technical Communication/ Universal Human Values	2	1	0	30	20	50		100		150	3
			3	0	0								
3	KCE301	Egg. Mechanics	3	1	0	30	20	50		100		150	4
4	KCE301	Surveying and Geomatics	3	1	0	30	20	50		100		150	4
5	KCE303	Fluid Mechanics	3	0	0	30	20	50		100		150	3
6	KCE351	Building Planning & Drawing Lab	0	0	2				25		25	50	1
7	KCE352	Surveying and Geomatics Lab	0	0	2				25		25	50	1
8	KCE353	Fluid Mechanics Lab	0	0	2				25		25	50	1
9	KCE354	Mini Project or Internship Assessment*	0	0	2			50				50	1
10	KNC301/KNC302	Computer System Security: Python Programming	2	0	2	15	10	25		50			0
11		MOOCs (Essential for Honors Degree)											
Total												950	22

*The Mini Project or Internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.



IMS Engineering College, Ghaziabad

Sub Code	KAS303
Sub. Name	Maths III

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to get the idea of Laplace transform of functions and their application	
CO2	The students will be able to get the idea of Fourier transform of functions and their applications	
CO3	The students will be able to get the basic ideas of logic and Group and uses	
CO4	The students will be able to get the idea s of sets, relation, function and counting techniques	
CO5	The students will be able to get the idea of lattices, Boolean algebra, Tables and Karnaugh maps.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	1	1	2	1	1	1	2
CO2	3	2	3	2	2	1	1	1	1	1	1	1
CO3	2	2	3	2	2	1	1	1	1	2	1	1
CO4	2	3	1	2	2	1	1	1	1	1	1	2
CO5	3	3	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.20	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	2	3
CO3	2	2	3
CO4	2	3	3
CO5	3	3	2
Avg	2.40	2.60	2.60



IMS Engineering College, Ghaziabad

Sub Code	KVE-301
Sub. Name	Universal Human Values

COURSE OUTCOMES		Bloom's Level
CO1	The student will be able to understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society	
CO2	The student will be able to distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.	
CO3	The student will be able to understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society	
CO4	The student will be able to understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	
CO5	The student will be able to distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	2	3	2	2	1	2	1	1	1	1	2
CO3	2	3	2	2	2	2	1	1	1	1	1	1
CO4	2	3	3	2	2	1	2	1	1	1	1	2
CO5	1	3	2	2	2	2	1	1	1	1	1	1
Avg	2.20	2.80	2.40	2.00	2.00	1.40	1.40	1.20	1.00	1.00	1.00	1.40



IMS Engineering College, Ghaziabad

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	3	3
CO3	2	2	3
CO4	3	2	2
CO5	3	3	2
Avg	2.60	2.60	2.40

Sub Code	KCE-301
Sub. Name	Engg. Mechanics

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to use scalar and vector analytical techniques for analyzing forces in statically determinate structures	
CO2	Students will be able to apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems	
CO3	Students will be able to apply basic knowledge of mathematics and physics to solve real-world problems	
CO4	Students will be able to understand basic dynamics concepts – force, momentum, work and energy	
CO5	Students will be able to understand and be able to apply Newton's laws of motion	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	3	2	1	1	2	1	1	1	1
CO2	2	3	2	2	2	2	1	1	1	2	1	2
CO3	2	1	2	3	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	2	1	1	1	1	2
CO5	2	3	3	2	2	1	1	1	1	1	1	1
Avg	2.20	2.60	2.40	2.40	2.00	1.20	1.20	1.20	1.00	1.20	1.00	1.40



IMS Engineering College, Ghaziabad

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	1	2	3
CO3	2	3	3
CO4	3	2	3
CO5	3	3	2
Avg	2.40	2.60	2.60

Sub Code	KCE-302
Sub. Name	Surveying and Geomatics

COURSE OUTCOMES		Bloom's Level
CO1	The student will be able to describe the function of surveying and work with survey instruments, take observations, and prepare plan, profile, and cross-section and perform calculations.	
CO2	The student will be able to calculate, design and layout horizontal and vertical curves.	
CO3	The student will be able to operate a total station and GPS to measure distance, angles, and to calculate differences in elevation. Reduce data for application in a geographic information system	
CO4	The student will be able to relate and apply principles of photogrammetry for surveying	
CO5	The student will be able to apply principles of Remote Sensing and Digital Image Processing for Civil Engineering problems.	



IMS Engineering College, Ghaziabad

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	2	1	1	1	1	1	2
CO3	2	3	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	2	1	1	1	1	1	1
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.80	2.40	2.00	2.00	1.40	1.00	1.20	1.00	1.00	1.00	1.20

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	2	3
CO3	3	2	3
CO4	2	3	3
CO5	3	3	2
Avg	2.80	2.60	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE-303
Sub. Name	Fluid Mechanics

COURSE OUTCOMES		Bloom's Level
CO1	The student will be able to understand the broad principles of fluid statics, kinematics and dynamics	
CO2	The student will be able to understand definitions of the basic terms used in fluid mechanics	
CO3	The student will be able to understand classifications of fluid flow	
CO4	The student will be able to apply the continuity, momentum and energy principles	
CO5	The student will be able to apply dimensional analysis	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	1	1	2	1	1	1	1
CO2	3	2	3	2	3	1	1	1	1	2	2	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	3	1	1	1	1	2	1	2
CO5	3	2	2	2	2	1	1	1	1	1	1	1
Avg	2.80	2.40	2.60	2.00	2.40	1.00	1.00	1.20	1.00	1.40	1.20	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	3	3
CO3	2	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.40	3.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	KNC-301
Sub. Name	Computer System Security

COURSE OUTCOMES		Bloom's Level
CO1	The student will be able to discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	
CO2	The student will be able to discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats	
CO3	The student will be able to discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.	
CO4	The student will be able to articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios	
CO5	The student will be able to articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2	2	1	2	2	1	1	1	1
CO2	2	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	2	1	1	1	2	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.20	2.40	2.60	2.00	2.00	1.00	1.40	1.20	1.00	1.00	1.20	1.40

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	2	3	2
CO2	2	2	3
CO3	2	2	3
CO4	2	3	3
CO5	3	3	1
Avg	2.20	2.60	2.40



B. Tech (Civil Engineering)

4th Semester

SEMESTER - IV													
S.No	Subject	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
	Codes		L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS403/ KOE041-48	Maths III/ Engg. Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS401	Universal Human Values/Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3	KCE401	Materials, Testing & Construction Practices	3	0	0	30	20	50		100		150	3
4	KCE402	Introduction to Solid Mechanics	3	1	0	30	20	50		100		150	4
5	KCE403	Hydraulic Engineering and Machines	3	1	0	30	20	50		100		150	4
6	KCE451	Material Testing Lab	0	0	2				25		25	50	1
7	KCE452	Solid Mechanics Lab	0	0	2				25		25	50	1
8	KCE453	Hydraulics & Hydraulic Machine Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming/Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											
		Total										900	21



IMS Engineering College, Ghaziabad

Sub Code	KAS403
Sub. Name	Maths III

Course Outcomes

CO1	The students will learn the idea of Laplace transform of functions and their application
CO2	The students will learn the idea of Fourier transform of functions and their applications
CO3	The students will learn the basic ideas of logic and Group and uses
CO4	The students will learn the idea s of sets, relation, function and counting techniques.
CO5	The students will learn the idea of lattices, Boolean algebra, Tables and Karnaugh maps.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	1							1
CO2	3	2	2	2	1							1
CO3	2	2	2	2	1							1
CO4	2	2	3	2	1							1
CO5	2	3	3	3	1							1
Avg	2.20	2.20	2.40	2.20	1.00	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.00

CO-PSO Matrix

COs	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3	2	
CO3	2	1	
CO4	2	2	
CO5	3	1	
Avg	2.60	1.40	#DIV/0!



IMS Engineering College, Ghaziabad

Sub Code	KVE-401
Sub. Name	Universal Human Values
Course Outcomes	
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						3	3	3	2		1	2
CO2						3	2	2	2		1	1
CO3						2	3	3	2			
CO4						3	2	2	2		1	1
CO5						2	3	3	2			
Avg	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2.60	2.60	2.60	2.00	#####	1.00	1.33

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	1		1
CO2			1
CO3	1		1
CO4			1
CO5	1		1
Avg	1.00	#DIV/0!	1.00



IMS Engineering College, Ghaziabad

Sub Code	KCE401
Sub. Name	Materials, Testing & Construction Practices
Course Outcomes	
CO1	student will be able to- Identify various building materials and to understand their basic properties.
CO2	student will be able to-Understand the use of non-conventional civil engineering materials
CO3	student will be able to-Study suitable type of flooring and roofing in the construction process.
CO4	student will be able to-Characterize the concept of plastering, pointing and various other building services
CO5	student will be able to-Exemplify the various fire protection, sound and thermal insulation techniques, maintenance and repair of buildings

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2		2							1
CO2	2	3	3	2	2							
CO3	2			3								1
CO4	1	3	3	2	2							1
CO5	2	2	3		2							
Avg	1.80	2.75	2.75	2.33	2.00	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3		3
CO2	2	3	
CO3		2	3
CO4	2	2	2
CO5	2	1	2
Avg	2.25	2.00	2.50



IMS Engineering College, Ghaziabad

Sub Code	KCE402
Sub. Name	INTRODUCTION TO SOLID MECHANICS
Course Outcomes	
CO1	student will be able to Describe the concepts and principles of stresses and strains
CO2	student will be able to Analyze solid mechanics problems using classical methods and energy methods
CO3	student will be able to Analyze structural members subjected to combined stresses
CO4	student will be able to Calculate the deflections at any point on a beam subjected to a combination of loads
CO5	student will be able to Understand the behavior of columns, springs and cylinders against loads.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2		2							1
CO2	3	3	3	2	2							
CO3	2			3								2
CO4	2	1	3	3	3							1
CO5	2	2	3	2	2							
Avg	2.20	1.75	2.75	2.50	2.25	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.33

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3		3
CO2	1	1	
CO3		2	3
CO4	3	3	3
CO5	2	2	2
Avg	2.25	2.00	2.75



IMS Engineering College, Ghaziabad

Sub Code	KCE403
Sub. Name	HYDRAULIC ENGINEERING & MACHINES
Course Outcomes	
CO1	student will be able to- Apply their knowledge of fluid mechanics in addressing problems in open channel
CO2	student will be able to-Solve problems in uniform, gradually and rapidly varied flows in steady state conditions.
CO3	student will be able to-Have knowledge in hydraulic machineries like pumps and turbines.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2	1							1
CO2	2	3	3	3	1							1
CO3	3	2		2	2							1
Avg	2.33	2.33	3.00	2.33	1.33	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	1
CO2	3	2	1
CO3	3		2
Avg	3.00	2.00	1.33



IMS Engineering College, Ghaziabad

Sub Code	KCE451
Sub. Name	Material Testing Lab
Course Outcomes	
CO1	Develop knowledge of material science and behaviour of various building materials used in construction
CO2	Identify the construction materials required for the assigned work
CO3	Provide procedural knowledge of the simple testing methods of cement, lime and concrete etc.
CO4	Identify, formulate and solve engineering problems of structural elements subjected to flexure.
CO5	Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	1	2							1
CO2	2	2	3	2	2							
CO3	2	1	1	3								1
CO4	1	3	3	2	2							1
CO5	2	2	3	1	2							1
Avg	1.80	2.20	2.40	1.80	2.00	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	1	3
CO2	2	3	
CO3	1	2	3
CO4	2	2	2
CO5	2	1	2
Avg	2.00	1.80	2.50



IMS Engineering College, Ghaziabad

Sub Code	KCE452
Sub. Name	Solid Mechanics Lab
Course Outcomes	
CO1	Analyze and correlate stress, strain and elastic deformation of an engineering material.
CO2	Predict the engineering property and behavior of material under different loading and support conditions under static loading conditions.
CO3	Analyze and predict the engineering property and behavior of material under impact loading conditions
CO4	Analyze and correlate the elastic constants and deformation under flexural loading and torsion.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2							
CO2	2			3								2
CO3	2	1	3	3	3							1
CO4	2	2	3	2	2							
Avg	2.25	2.00	3.00	2.50	2.33	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.50

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	1	1	
CO2		2	3
CO3	3	3	3
CO4	2	2	2
Avg	2.00	2.00	2.67



IMS Engineering College, Ghaziabad

Sub Code	KCE453
Sub. Name	Hydraulics & Hydraulic Machine Lab
Course Outcomes	
CO1	To identify the behaviour of analytical models introduced in lecture to the actual behaviour of real fluid flows.
CO2	To explain the standard measurement techniques of fluid mechanics and their applications.
CO3	To illustrate the students with the components and working principles of Pumps.
CO4	To illustrate the students with the components and working principles of of Turbines, Pumps, and other miscellaneous hydraulics machines.
CO5	To analyze the laboratory measurements and to document the results in an appropriate format.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2	2							1
CO2	1	2	2	1	2							2
CO3	2	2	3	2	1							1
CO4	2	3	3	3	1							1
CO5	3	2		2	2							1
Avg	2.00	2.40	2.75	2.00	1.60	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.20

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	3	2	2
CO3	3	2	1
CO4	3	2	1
CO5	3		2
Avg	2.80	2.00	1.60



IMS Engineering College, Ghaziabad

Sub Code	KNC 401
Sub. Name	Computer System Security
Course Outcomes	
CO1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats
CO2	To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats
CO3	To discover and explain mobile software bugs posing cyber security threats explain and recreate exploits, and to explain mitigation techniques.
CO4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios
CO5	To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	1	2							1
CO2	3	3	3	2	2							
CO3	2	1	1	3	1							2
CO4	2	1	3	3	3							1
CO5	2	2	3	2	2							1
Avg	2.20	1.60	2.40	2.20	2.00	#DIV/0!	#DIV/0!	#DIV/0!	#####	#####	#####	1.25

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	1	3
CO2	1	1	2
CO3	2	2	3
CO4	3	3	3
CO5	2	2	2
Avg	2.20	1.80	2.60



B. Tech (Civil Engineering)

5th Semester

FIFTH SEMESTER

CIVIL ENGINEERING

SESSION 2020-21

S.No	Subject Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCE 501	Geotechnical Engineering	3	1	0	30	20	50		100		150	4
2	KCE 502	Structural Analysis	3	1	0	30	20	50		100		150	4
3	KCE 503	Quantity Estimation and Construction Management	3	1	0	30	20	50		100		150	4
4		Departmental Elective-I	3	0	0	30	20	50		100		150	3
	KCE 051	Concrete Technology											
	KCE 052	Modern Construction Materials											
	KCE 053	Open Channel Flow											
	KCE 054	Engineering Geology											
5		Departmental Elective-II	3	0	0	30	20	50		100		150	3
	KCE-055	Engineering Hydrology											
	KCE-056	Sense and Instrumentation Technologies for Civil Engineering Applications											
	KCE-057	Air and Noise Pollution Control											
	KCE-058	GIS and Advance Remote Sensing											
6	KCE-551	CAD Lab	0	0	2				25		25	50	1
7	KCE-552	Geotechnical Engineering Lab	0	0	2				25		25	50	1
8	KCE-553	Quantity Estimation and Management Lab	0	0	2				25		25	50	1
9	KCE-554	Mini Project or Internship Assessment*	0	0	2				50			50	1
10		Constitution of India/Essence of Indian Traditional Knowledge	2	0	0								
11		MOOCs (Essential for Hons. Degree)											
		Total	17	3	8							950	22

* The Mini Project or Internship (4 weeks) conducted during semester break after IV semester and will be assessed during V semester.

NOTE:

1. Regular classroom interaction with industry experts is to be ensured in all theory courses (minimum two expert talks from relevant industry).
2. Working on experiments using virtual labs is to be ensured in lab courses.
3. Student's visit to industry/industry expert's project site must be arranged as & when possible.



IMS Engineering College, Ghaziabad

Sub Code	KCE 501
Sub. Name	GEOTECHNICAL ENGINEERING

COURSE OUTCOMES		Bloom's Level
CO1	Classify the soil and determine its Index properties.	
CO2	Evaluate permeability and seepage properties of soil.	
CO3	Interpret the compaction and consolidation characteristics & effective stress concept of soil.	
CO4	Determine the vertical and shear stress under different loading conditions and explain the phenomenon of soil liquefaction.	
CO5	Interpret the earth pressure and related slope failures.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	2	2	1	2	2	2	3
CO2	3	3	3	2	2	2	2	1	2	1	2	3
CO3	3	3	3	3	2	1	1	2	2	1	1	2
CO4	3	3	3	2	3	2	1	2	1	2	1	1
CO5	3	2	3	3	2	2	1	2	1	1	1	1
Avg	3	2.8	3	2.6	2.2	1.8	1.4	1.6	1.6	1.4	1.00	2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	2	3
CO3	3	3	3
CO4	2	3	3
CO5	3	2	2
Avg	2.8	2.6	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE502
Sub. Name	STRUCTURAL ANALYSIS

COURSE OUTCOMES		Bloom's Level
CO1	Explain type of structures and method for their analysis.	
CO2	Analyze different types of trusses for member forces.	
CO3	Compute slope and deflection in determinate structures using different methods.	
CO4	Apply the concept of influence lines and moving loads to compute bending moment and shear force at different sections.	
CO5	Analyze determinate arches for different loading conditions.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	2	1	1	2	1	1	2
CO2	3	2	3	3	2	2	1	2	1	2	1	1
CO3	3	3	2	3	2	2	1	1	2	2	2	1
CO4	3	2	3	3	2	1	2	1	1	1	2	1
CO5	3	3	2	3	2	1	1	2	1	1	1	2
Avg	3	2.60	2.6	2.8	2.2	1.6	1.2	1.4	1.4	1.4	1.4	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	3
CO3	3	2	3
CO4	3	3	3
CO5	3	3	2
Avg	3	2.8	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE 503
Sub. Name	QUANTITY ESTIMATION AND CONSTRUCTION MANAGEMENT

COURSE OUTCOMES		Bloom's Level
CO1	Understand the importance of units of measurement and preliminary estimate for administrative approval of projects.	
CO2	Understand the contracts and tender documents in construction projects.	
CO3	Analyze and assess the quantity of materials required for civil engineering works as per specifications.	
CO4	Evaluate and estimate the cost of expenditure and prepare a detailed rate analysis report.	
CO5	Analyze and choose cost effective approach for civil engineering projects.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	2	2	1	2	1	1	1	2
CO2	3	2	3	3	2	1	2	1	1	2	1	2
CO3	3	3	2	2	2	1	2	1	2	2	1	3
CO4	3	3	3	2	2	2	1	1	1	1	2	2
CO5	3	2	3	2	1	1	1	2	1	1	1	2
Avg	3	2.60	2.6	2.4	1.8	1.4	1.4	1.4	1.2	1.4	1.2	2.2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	2	3
CO3	2	3	3
CO4	3	3	3
CO5	3	2	2
Avg	2.8	2.6	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE 051
Sub. Name	CONCRETE TECHNOLOGY

COURSE OUTCOMES		Bloom's Level
CO1	Understand the properties of constituent material of concrete.	
CO2	Apply admixtures to enhance the properties of concrete.	
CO3	Evaluate the strength and durability parameters of concrete.	
CO4	Design the concrete mix for various strengths using difference methods	
CO5	Use advanced concrete types in construction industry.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	2	1	1	2	2	1	2	2
CO2	2	3	3	2	1	1	2	1	1	2	1	2
CO3	3	3	3	2	2	1	2	1	2	1	2	1
CO4	3	3	2	2	2	1	1	2	1	1	1	2
CO5	3	2	3	2	1	2	1	1	1	1	1	2
Avg	2.8	2.8	2.6	2.2	1.6	1.2	1.4	1.4	1.4	1.2	1.4	1.8

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	2	3
CO3	2	3	2
CO4	3	3	2
CO5	3	2	2
Avg	2.8	2.6	2.4



IMS Engineering College, Ghaziabad

Sub Code	KCE055
Sub. Name	ENGINEERING HYDROLOGY

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basic concept of hydrological cycle and its various phases.	
CO2	Understand the concept of runoff and apply the knowledge to construct the hydrograph.	
CO3	Apply the various methods to assess the flood.	
CO4	Assess the quality of various forms of water and their aquifer properties.	
CO5	Understand the well hydraulics and apply ground water modelling techniques.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	2
CO2	3	3	3	2	2	1	1	1	2	1	1	2
CO3	3	2	3	2	2	1	1	1	1	1	1	3
CO4	3	3	2	2	2	1	1	1	2	1	1	2
CO5	3	3	2	2	2	1	2	1	1	1	1	2
Avg	3	2.8	2.40	2.00	2.00	1.00	1.2	1.20	1.4	1.00	1.00	2.2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	2	3
CO3	2	3	2
CO4	3	2	3
CO5	3	2	3
Avg	2.6	2.4	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE552
Sub. Name	GEOTECHNICAL ENGINEERING LAB

COURSE OUTCOMES		Bloom's Level
CO1	Determine index properties of soils	
CO2	Classify soils	
CO3	Determine engineering properties of soils	
CO4	Apply the concept of MDD and OMC to control compaction in the field.	
CO5	Analyze various soil parameters and prepare soil report.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1	1	1	2	1	1	1	2
CO2	2	3	2	2	2	1	1	2	1	1	1	2
CO3	2	2	3	2	2	1	1	1	1	2	1	2
CO4	3	2	3	2	2	1	1	2	1	1	1	1
CO5	3	2	3	2	2	1	1	2	1	1	1	2
Avg	2.60	2.4	2.6	2.00	1.8	1.00	1.00	1.8	1.00	1.2	1.00	1.8

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	2	2	2
CO3	3	2	3
CO4	3	2	2
CO5	2	3	2
Avg	2.6	2.2	2.4



IMS Engineering College, Ghaziabad

Sub Code	KCE-553
Sub. Name	QUANTITY ESTIMATION AND MANAGEMENT LAB

COURSE OUTCOMES		Bloom's Level
CO1	Study of DSR, CPWD specifications and NBC.	
CO2	Estimation of quantities for any one of the following: Building/ Septic tank/Water supply pipe line/road/bridge.	
CO3	Preparation of Bill of Quantities (BOQ) for above project.	
CO4	Practice on open source project management software / MS Project/Primavera software for same problem.	
CO5	Study of any full set of tender documents (Institute shall provide the set from ongoing/ completed tenders).	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	3
CO2	3	2	3	2	2	1	1	1	2	1	1	2
CO3	2	2	3	2	2	1	1	2	1	2	1	2
CO4	3	2	3	2	3	1	1	1	2	1	1	2
CO5	3	3	2	2	2	1	1	2	1	1	1	2
Avg	2.8	2.4	2.6	2.00	2.2	1.00	1.00	1.6	1.4	1.2	1.00	2.2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	2	2
CO3	3	2	3
CO4	2	3	2
CO5	3	2	2
Avg	2.6	2.4	2.2



IMS Engineering College, Ghaziabad

Sub Code	KCE-551
Sub. Name	CAD LAB

COURSE OUTCOMES		Bloom's Level
CO1	Understand computer aided drafting and different coordinate system	
CO2	Drawing of Regular shapes using Editor Mode and Exercise on Draw tools and Modify tools	
CO3	Drawing of building components like walls, lintels, Doors, and Windows. Using CAD software	
CO4	Drawing a plan of Building and dimensioning. Developing a 3-D plan from a given 2-D plan	
CO5	Developing sections and elevations for given a) Single storied buildings b) multi storied buildings	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	2	3
CO3	2	3	2
CO4	2	2	3
CO5	3	3	2
Avg	2.40	2.6	2.4



IMS Engineering College, Ghaziabad

Sub Code	KNC501
Sub. Name	Constitution of India, Law and Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Identify and explore the basic features and modalities about Indian constitution.	
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.	
CO3	Differentiate different aspects of Indian Legal System and its related bodies.	
CO4	Discover and apply different laws and regulations related to engineering practices.	
CO5	. Correlate role of engineers with different organizations and governance models	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						2		2	1	1	2	2
CO2						2		1	1	1	2	2
CO3						2	1	1	1	1	1	2
CO4						3	2	2	1	2	1	2
CO5						3	2	2	1	2	1	2
Avg						2.4	1	1.6	1	1.4	1.4	2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	1	1	1
CO2	1	1	1
CO3	1	1	1
CO4	1	2	1
CO5	1	2	1
Avg	1	1.4	1



B. Tech (Civil Engineering)

Evaluation Scheme

S.No	Subject Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCE 601	Design of Concrete Structures	3	1	0	30	20	50		100		150	4
2	KCE 602	Transportation Engineering	3	1	0	30	20	50		100		150	4
3	KCE 603	Environmental Engineering	3	1	0	30	20	50		100		150	4
4		Departmental Elective-III	3	0	0	30	20	50		100		150	3
	KCE 061	Advance Structural Analysis											
	KCE 062	River Engineering											
	KCE 063	Repair and Rehabilitation of Structures											
	KCE 064	Foundation Engineering											
5		Open Elective-I	3	0	0	30	20	50		100		150	3
6	KCE 651	Transportation Engineering Lab	0	0	2				25		25	50	1
7	KCE 652	Environmental Engineering Lab	0	0	2				25		25	50	1
8	KCE 653	Structural Detailing Lab	0	0	2				25		25	50	1
9	NC*	Essence of Indian Traditional Knowledge/Constitution of India	2	0	0	15	10	25		50			
10		MOOCs (Essential for Hons. Degree)											
		Total	17	3	6							900	21



IMS Engineering College, Ghaziabad

Sub Code	KCE-601
Sub. Name	Design of Concrete Structures

COURSE OUTCOMES		Bloom's Level
CO-1	Analyse and Design RCC beams for flexure by IS methods.	
CO-2	Analyse and Design RCC beams for shear by IS methods.	
CO-3	Analyse and Design RCC slabs and staircase by IS methods.	
CO-4	Design the RCC compression members by IS methods.	
CO-5	Design various types of footings and cantilever retaining wall	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	1	3	3
CO3	3	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.50	3.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE-602
Sub. Name	Transportation Engineering

COURSE OUTCOMES		Bloom's Level
CO-1	Understand the role of Transportation Engineering and History of Transportation Development	
CO-2	Understand the geometric design of Highways	
CO-3	Understand Traffic Characteristic, analysis factors affecting traffic design and Traffic Signal Design	
CO-4	Application of different Highway materials and their selection in highway for any specific location	
CO-5	Apply different highway construction methods for appropriate site conditions	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	3	2
CO2	1	3	3
CO3	3	3	3
CO4	3	3	3
CO5	3	3	2
Avg	2.5	3.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE-603
Sub. Name	Environmental Engineering

COURSE OUTCOMES		Bloom's Level
CO-1	Assess water demand and optimal size of water mains.	
CO-2	Layout the distribution system & assess the capacity of reservoir.	
CO-3	Investigate physical, chemical & biological parameter of water.	
CO-4	Design treatment units for water and waste water.	
CO-5	Apply emerging technologies for treatment of waste water.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	1	3	3
CO3	3	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.50	3.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE-062
Sub. Name	River Engineering

COURSE OUTCOMES		Bloom's Level
CO-1	Explain river morphology and its classification.	
CO-2	Explain hydraulic geometry and behaviour of river.	
CO-3	Explain socio-cultural influences and ethics of stream restorations.	
CO-4	Analyse flow and sediment transport in rivers and channels.	
CO-5	Design guide band, embankments and flood protection systems.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	1	3	3
CO3	3	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.50	3.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE-651
Sub. Name	Transportation Engineering Lab

COURSE OUTCOMES		Bloom's Level
CO-1	To Determine the Crushing Value, Impact Value, Flakiness Index and Elongation Index, Los Angeles Abrasion Value and Stripping Value of Coarse Aggregates	
CO-2	To determine the penetration Value, Softening Point, Ductility Value of Bitumen	
CO-3	To determine the Softening Point of Bituminous material	
CO-4	To determine the Ductility Value of Bituminous material	
CO-5	To determine the Flash and Fire Point and stripping value of Bituminous material	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	1	3	3
CO3	3	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.4	3.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	KCE-652
Sub. Name	Environmental Engineering Lab

COURSE OUTCOMES		Bloom's Level
CO-1	Build knowledge about the crystal structure and classification of materials.	
CO-2	Understand methods of determining mechanical properties and their suitability for applications.	
CO-3	Classify cast irons and study their applications	
CO-4	Select suitable heat-treatment process to achieve desired properties of metals and alloys	
CO-5	Appraise the applications of advanced materials technology in their daily life	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	1	3	3
CO3	2	3	3
CO4	3	3	2
CO5	3	2	2
Avg	2.50	2.80	2.50



IMS Engineering College, Ghaziabad

Sub Code	KCE-653
Sub. Name	Structural Detailing Lab

COURSE OUTCOMES		Bloom's Level
CO-1	To verify Maxwell's Reciprocal theorem	
CO-2	Horizontal thrust in a three-hinged arch and to draw influence line diagrams for Horizontal Thrust end Bending moment.	
CO-3	Classify cast irons and study their applications	
CO-4	To find horizontal thrust in a two hinged arch and to draw influence line diagrams for horizontal Thrust and bending moment	
CO-5	Study of SP34/IS13920/IS456:2000 for detailing of structural elements.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	1	3	3
CO3	3	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.50	3.00	2.60



IMS Engineering College, Ghaziabad

B. Tech (Civil Engineering)

SEVENTH SEMESTER		CIVIL ENGINEERING			SESSION 2019-20				
S. No.	Subject Code	Subject Name	Department	L-T-P	Th/Lab Marks	Sessional		Total	Credit
					ESE	CI	TA		
1		Open Elective Course-1	Other Deptt.	3-0-0	70	20	10	100	3
2	RCE071	Elective -3 Geology and Soil Mechanics	Core Deptt.	3-0-0	70	20	10	100	3
	RCE072	Rural Development Engineering							
	RCE073	Structural Health Monitoring & Rehabilitation							
	RCE074	River Engineering							
3	RCE075	Elective -4 Computational Fluid Dynamics	Core Deptt.	3-1-0	70	20	10	100	4
	RCE076	Railways, Airport & Water Ways							
	RCE077	Air & Noise Pollution Control							
	RCE078	Ground Improvement Techniques							
4	RCE701	Design of Structure-III	Core Deptt.	3-1-0	70	20	10	100	4
5	RCE702	Water Resources	Core Deptt.	3-0-0	70	20	10	100	3
6	RCE751	Non Destructive Testing Laboratory	Core Deptt.	0-0-2	50		50	100	1
7	RCE752	Mini Project	Core Deptt.	0-0-2	50		50	100	1
8	RCE753	Industrial Training	Core Deptt.	0-0-3			100	100	2
9	RCE754	Project-1	Core Deptt.	0-0-6			200	200	3
	TOTAL				450	100		1000	24



IMS Engineering College, Ghaziabad

Sub Code	RCE-074
Sub. Name	River Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to explain river morphology and its classification.	
CO2	Students should be able to explain hydraulic geometry and behavior of river.	
CO3	Students should be able to explain socio-cultural influences and ethics of stream restorations.	
CO4	Students should be able to Analyze flow and sediment transport in rivers and channels.	
CO5	Students should be able to Design guide band, embankments and flood protection systems.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	3	2	1	1	2	1	1	1	1
CO2	2	2	2	2	2	1	1	1	1	1	1	1
CO3	3	3	2	2	2	1	1	2	1	1	1	1
CO4	3	2	3	2	2	1	1	1	1	1	1	2
CO5	3	2	2	2	2	1	1	1	1	1	1	1
Avg	2.6	2.4	2.2	2.2	2	1	1	1.4	1	1	1	1.2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	3	2
CO3	2	2	3
CO4	2	2	2
CO5	2	3	3
Avg	2.2	2.4	2.6



IMS Engineering College, Ghaziabad

Sub Code	RCE-076
Sub. Name	Railways, Airport and Water Ways

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to Understand the history and development, role of railways, railway planning and development based on essential criteria's.	
CO2	Students should be able to explain Track Geometrics, Turnouts and Crossings of railway Stations.	
CO3	Students should be able to explain Signal and Interlocking of Urban Railways	
CO4	Students should be able to Design and plan airport layout, design facilities required for runway, taxiway and impart knowledge about visual aids.	
CO5	Students should be able to Design and planning of harbour and other costal structures.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	1	1	1	1	2	1	1	1
CO2	2	2	3	2	1	2	1	1	1	1	1	1
CO3	2	3	2	3	1	1	1	1	1	1	1	2
CO4	2	2	3	2	1	1	1	1	2	1	1	2
CO5	2	3	2	2	1	1	1	1	1	1	1	1
Avg	2.2	2.4	2.6	2.2	1	1.2	1	1	1.4	1	1	1.4

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	2	3
CO2	3	1	2
CO3	2	2	2
CO4	3	2	2
CO5	2	2	3
Avg	2.4	1.8	2.4



IMS Engineering College, Ghaziabad

Sub Code	RCE-701
Sub. Name	Design of Structure-III

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to Learn the design philosophies of steel structures	
CO2	Students should be able to Design riveted, bolted, pinned and welded connections for steel structures.	
CO3	Students should be able to Design of tension steel members.	
CO4	Students should be able to Design of compression steel members	
CO5	Students should be able to Design of various types of steel beams and plate girders.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	2	1	1	1	1	1	1	1
CO2	2	2	3	2	2	1	1	2	1	1	1	1
CO3	2	3	2	3	3	1	1	1	1	1	1	2
CO4	2	2	3	2	2	1	1	1	1	1	1	2
CO5	2	3	2	2	2	1	1	1	1	1	1	1
Avg	2.2	2.4	2.6	2.2	2.2	1	1	1.2	1	1	1	1.4

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	2	3
CO2	3	2	2
CO3	2	3	2
CO4	3	2	2
CO5	2	3	3
Avg	2.4	2.4	2.4



IMS Engineering College, Ghaziabad

Sub Code	RCE-702
Sub. Name	Water Resources Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to explain Various components of hydrologic cycle that affect the movement of water in the earth.	
CO2	Students should be able to explain Various Stream flow measurements technique	
CO3	Students should be able to explain the basic requirements of irrigation and various irrigation techniques, requirements of the crops	
CO4	Students should be able to Analyse Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design	
CO5	Students should be able to explain Basic components of river Training works.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	1	1	1	1	1
CO2	2	2	3	2	2	1	1	2	1	1	1	1
CO3	2	3	2	3	2	1	1	2	1	1	1	2
CO4	3	2	3	2	3	1	1	1	1	1	1	1
CO5	2	3	2	2	2	1	1	1	1	1	1	1
Avg	2.4	2.6	2.4	2.2	2.2	1	1	1.4	1	1	1	1.2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	2	2
CO3	2	2	2
CO4	3	2	2
CO5	2	3	3
Avg	2.4	2.2	2.4



IMS Engineering College, Ghaziabad

Sub Code	RCE-751
Sub. Name	Non Destructive Testing Laboratory

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to List and define different defects that occur in welding shown through Non-Destructive Examination/Destructive Testing.	
CO2	Students should be able to identify the types of equipment used for each Non-Destructive and Destructive Examination.	
CO3	Students should be able to explain the purpose of the Equipment, Application, and standard techniques required to perform major non-destructive and destructive examinations of welds.	
CO4	Students should be able to go to specific Code, Standard, or Specification related to each testing method.	
CO5	Students should be able to have the knowledge and essential skills to identify strengths and weaknesses in materials used in fabrication	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	3	2	1	1	2	1	1	1	1
CO2	2	2	2	2	2	1	1	1	1	1	1	1
CO3	3	3	2	2	2	1	1	2	1	1	1	1
CO4	3	2	3	2	2	1	1	1	1	1	1	2
CO5	3	2	2	2	2	1	1	1	1	1	1	1
Avg	2.6	2.4	2.2	2.2	2	1	1	1.4	1	1	1	1.2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	3	2
CO3	2	2	3
CO4	2	2	2
CO5	2	3	3
Avg	2.2	2.4	2.6



IMS Engineering College, Ghaziabad

B. Tech (Civil Engineering)

EIGHTH SEMESTER		CIVIL ENGINEERING			SESSION 2019-20			Total	Credit	
S No.	Subject Code	Subject Name	Teaching Deptt.	L-T-P	Th/Lab Marks		Sessional			
					ESE	CT	TA			
1		Open Elective Course -2	Other Deptt.	3---0---0	70	20	10	100	3	
2	RCE081 RCE082 RCE083 RCE084	Elective -5 Finite Element Method Structural Dynamics Advanced Concrete Design Solid Waste Management	Core Deptt.	3---1---0	70	20	10	100	4	
3	RCE085 RCE086 RCE087 RCE088	Elective -6 Engineering Hydrology and Ground Water Management Urban Transportation System & Planning Probability Methods in Civil Engineering Earthquake Resistant Design of Structure	Core Deptt.	3---0---0	70	20	10	100	3	
4	RCE851	Seminar	Core Deptt.	0 ---0---3			100	100	2	
5	RCE852	Project-2	Core Deptt.	0---0---12	350		250	600	12	
	TOTAL				560	60	380	1000	24	

The required identification and distribution of electives through NPTEL has been made as given below.

Sem	Departmental Elective	Name of Elective through NPTEL
VIII	5	RCE082 Structural Dynamics
	6	RCE087 Probability Methods in Civil Engineering



IMS Engineering College, Ghaziabad

Sub Code	RCE084
Sub. Name	Solid Waste Management

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to understand effect of Solid waste on Public health its ecological impacts.	
CO2	Students should be able to Engineering system for on-site handling and processing of solid waste: separators, size reduction equipment etc.	
CO3	Students should be able to learn about Landfilling: Site selection criteria, landfill layout, and fill sections.	
CO4	Students should be able to Identify the use of Composting & types of composting.	
CO5	Students should be able to learn Hazardous wastes: risk assessment, Environmental legislation, Characterization and site assessment, Waste minimization and resource recovery.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	2	1	2	1	1
CO2	1	2	3	2	2	1	1	1	1	1	1	2
CO3	2	3	3	2	2	2	1	1	1	1	1	1
CO4	1	2	3	1	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	1.8	2.4	2.6	1.8	2	1.2	1	1.2	1	1.2	1	1.4

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	2	2	2
CO3	3	3	3
CO4	2	2	3
CO5	3	3	3
Avg	2.6	2.6	2.8



IMS Engineering College, Ghaziabad

Sub Code	RCE085
Sub. Name	Engineering Hydrology & Groundwater Management

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand hydrologic cycle, water budget equations, world water balance.	
CO2	Students would be able to understand about hydrograph, Factors affecting flood hydrographs.	
CO3	Students should be able to learn to calculate flood through Rational method, empirical formulae and statistical analysis.	
CO4	Students should be able to Identify the use groundwater its properties and Occurrence of ground water.	
CO5	Students should be able to learn about Ground Water quality, contamination of groundwater and its Control.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	3	2	2	1	1	2	1	2	1	1
CO2	1	2	2	2	3	2	1	1	1	1	1	2
CO3	2	2	3	2	2	1	1	2	1	1	1	1
CO4	3	2	2	1	2	1	1	1	1	1	2	2
CO5	2	3	2	2	2	1	1	1	1	1	1	1
Avg	2	2	2.4	1.8	2.2	1.2	1	1.4	1	1.2	1.2	1.4

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	1	2	3
CO2	2	3	2
CO3	2	3	2
CO4	3	2	3
CO5	3	2	3
Avg	2.2	2.4	2.6



IMS Engineering College, Ghaziabad

Sub Code	RCE086
Sub. Name	Renewable Energy

COURSE OUTCOMES		Bloom's Level
CO1	Students would be able to understand Various non-conventional energy resources.	
CO2	Students should be able to understand the concept of solar Thermal Energy.	
CO3	Students will be able to learn about geothermal energy and Magneto-hydrodynamics (MHD).	
CO4	Students should be able to Identify the use of Wind power and its sources, site selection, criterion.	
CO5	Students should be able to learn about bio-mass.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	3	2	2	1	1	2	1	1	1	1
CO2	1	3	2	2	3	2	2	1	1	1	1	2
CO3	3	3	3	2	2	1	1	2	2	1	1	1
CO4	3	2	2	1	2	1	1	1	1	1	2	2
CO5	2	3	2	2	2	1	1	1	1	1	1	1
Avg	2.2	2.4	2.4	1.8	2.2	1.2	1.2	1.4	1.2	1	1.2	1.4

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	1	2	2
CO2	2	1	3
CO3	3	2	3
CO4	3	3	1
CO5	3	2	3
Avg	2.4	2	2.4



IMS Engineering College, Ghaziabad

**Department
of
Electronics & Communication
Engineering**

2021-22



IMS Engineering College, Ghaziabad

Course Outcomes (CO)
Mapping with
Programme Outcomes (PO)
and
Programme Specific
Outcomes (PSO)



Institute Vision and Mission

Vision

Our vision is to impart Vibrant, Innovative and Global Education to make IMS the world leader in terms of Excellence of Education, Research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a Centre of Excellence in Technical and Management Education.
- To inculcate in its students the qualities of Leadership, Professionalism, Executive Competence and Corporate understanding.
- To imbibe and enhance Human Values, Ethics and Morals in our students.
- To transform students into Globally Competitive Professionals



Department Vision and Mission

Vision

To produce highly competent engineers by imparting innovative and accomplished information through global education and adequately prepare them to face the challenges of outside world by fulfilling the requirements of Electronics & Communication industries.

Mission

- To make the department a center of excellence in Electronics & Communication Engineering and to produce eminent engineers.
- To inculcate professionalism, team work, leadership qualities by imbibing high human values and professional ethics, in students.
- To enhance the employability of students by giving interdisciplinary knowledge to meet the need of society and become globally competitive professionals.
- To become a center for research in the stream of Electronics & Communication Engineering and to provide excellent learning environment for researchers by promoting research activities in the department.



Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Program Educational Objectives (PEOs)

- PEO1: Graduates will excel in Electronics & Communication Engineering, both in industrial and academic sectors by applying their technical skills and knowledge in a professional manner.
- PEO2: Graduates will be capable of effectively analyzing and solving engineering problems utilizing appropriate techniques and advanced engineering tools.
- PEO3: Graduates will be capable of applying their knowledge both in individual & multidisciplinary environments. They will also demonstrate excellent communication skills and caliber to work as a team.
- PEO4: Graduates will realize the significance of environmental concerns while keeping safety, ethical and societal values into consideration.
- PEO5: Graduates will be capable of implementing outputs derived from research-based knowledge in projects, analysis and interpretation of data leading to development of new processes and systems.

Program Specific Outcomes (PSO)

At the end of program, the student will have:

1. An ability to exhibit knowledge acquired from mathematics, engineering fundamentals, Electronics & Communication engineering and related fields for professional excellence in industry and research organizations.
2. An ability to solve and communicate complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive at cost effective and appropriate solutions.
3. Wisdom of social and environmental awareness along with ethical responsibility to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an Entrepreneur.
4. An ability to select appropriate techniques, resources for execution of projects and function effectively as an individual as well as a team member in multidisciplinary diverse environments.



IMS Engineering College, Ghaziabad

B.Tech. (Electronics & Communication Engg.)

Semester III

Sr. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	P S	TE	PE		
	KOE031-38/ KAS302	Engg. Science Course /Maths IV	3	1	0	30	20	50			100	150	4
1.	KAS301/ KVE301	Technical Communication /Universal Human values	2	1	0	30	20	50			100	150	3
			3	0	0								
2.	KEC301	Electronic Devices	3	1	0	30	20	50			100	150	4
3.	KEC302	Digital System Design	3	1	0	30	20	50			100	150	4
4.	KEC303	Network Analysis and Synthesis	3	0	0	30	20	50			100	150	3
6.	KEC351	Electronics Devices Lab	0	0	2					25	25	50	1
7.	KEC352	Digital System Design Lab	0	0	2					25	25	50	1
8.	KEC353	Network Analysis and Synthesis lab	0	0	2					25	25	50	1
9.	KEC354	Mini Project or Internship Assessment	0	0	2			50				50	1
10.	KNC301 /KNC302	Computer System Security /Python Programming	2	0	0	15	10	25			50		0
11.		MOOCs (Essential for Hons. Degree)											
TOTAL												950	22

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.



IMS Engineering College, Ghaziabad

Sub Code	KAS 302
Sub. Name	Maths IV

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to learn the idea of partial differentiation and types of partial differential equations	
CO2	The students will be able to learn the idea of classification of second partial differential equations, wave, heat equation and transmission lines	
CO3	The students will be able to learn the basic ideas of statistics including measures of central tendency, correlation, regression and their properties.	
CO4	The students will be able to learn the idea s of probability and random variables and various discrete and continuous probability distributions and their properties.	
CO5	The students will be able to learn the statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	1	-	-	-	-	1	-	-
CO2	3	2	1	-	-	-	-	-	-	-	-	1
CO3	3	2	1	1	-	-	-	-	-	1	1	1
CO4	3	2	1	1	1	-	-	-	-	-	1	1
CO5	3	2	1	3	1	-	1	-	-	1	1	1
Avg	3.00	2.00	1.00	1.67	1.00	-	1.00	-	-	1.00	1.00	1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-
CO2	3	-	-	-
CO3	3	1	-	-
CO4	3	1	-	-
CO5	3	2	-	1
Avg	3.00	1.33	-	1.00



IMS Engineering College, Ghaziabad

Sub Code	KAS301
Sub. Name	Technical Communication

COURSE OUTCOMES		Bloom's Level
CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as engineers.	
CO2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.	
CO3	Students would imbibe inputs by presentation skills to enhance confidence in face diverse audience.	
CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.	
CO5	It would enable them to evaluate their efficiency as fluent & efficient communicators by learning the voice-dynamics.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2	-	1	2	1	1	3	3	2	1
CO2	1	2	3	3	3	2	-	-	-	3	2	3
CO3	1	2	3	2	3	2	1	2	3	3	2	3
CO4	2	2	3	1	3	3	-	1	3	3	3	3
CO5	1	1	3	1	1	-	3	3	3	3	1	3
Avg	1.20	1.60	2.80	1.75	2.20	2.25	1.67	1.75	3.00	3.00	2.00	2.60

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	-	1	1
CO2	1	2	1	3
CO3	2	3	2	2
CO4	3	2	3	3
CO5	-	-	1	1
Avg	2.00	2.33	1.60	2.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 301
Sub. Name	Electronic Devices

COURSE OUTCOMES		Bloom's Level
CO1	Understand the principles of semiconductor Physics.	
CO2	Understand and utilize the mathematical models of semiconductor junctions.	
CO3	Understand carrier transport in semiconductors and design resistors.	
CO4	Utilize the mathematical models of MOS transistors for circuits and systems.	
CO5	Analyse and find application of special purpose diodes.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	1	-	-	-	-	1	1	2
CO2	2	3	2	2	2	-	-	-	-	1	1	1
CO3	1	2	3	2	2	-	-	-	-	1	2	2
CO4	3	3	3	3	3	-	-	-	-	1	3	2
CO5	2	1	1	1	1	-	-	-	-	1	3	2
Avg	2.00	2.00	2.00	1.80	1.80	-	-	-	-	1.00	2.00	1.80

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	-	1
CO2	2	1	-	1
CO3	3	2	-	3
CO4	3	2	-	3
CO5	1	1	-	2
Avg	2.20	1.40	-	2.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 302
Sub. Name	Digital System Design

COURSE OUTCOMES		Bloom's Level
CO1	Design and analyze combinational logic circuits.	
CO2	Design and analyze modular combinational circuits with MUX / DEMUX, Decoder & Encoder	
CO3	Design & analyze synchronous sequential logic circuits	
CO4	Analyze various logic families.	
CO5	Design ADC and DAC and implement in amplifier, integrator, etc.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	1	1	-	-	1	3	2	3
CO2	3	3	3	3	2	1	-	-	1	2	2	3
CO3	2	2	2	2	1	1	-	-	1	1	2	3
CO4	2	2	2	2	2	1	-	-	2	2	2	3
CO5	3	3	3	3	3	1	-	-	2	1	2	3
Avg	2.40	2.40	2.40	2.40	1.80	1.00	-	-	1.40	1.80	2.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	1	2
CO2	3	3	1	3
CO3	2	2	1	1
CO4	3	3	1	3
CO5	3	3	1	3
Avg	2.60	2.60	1.00	2.40



IMS Engineering College, Ghaziabad

Sub Code	KEC 303
Sub. Name	Network Analysis and Synthesis

COURSE OUTCOMES		Bloom's Level
CO1	Understand basics electrical circuits with nodal and mesh analysis.	
CO2	Appreciate electrical network theorems.	
CO3	Apply Laplace transform for steady state and transient analysis.	
CO4	Determine different network functions.	
CO5	Appreciate the frequency domain techniques.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	-	-	1	1	2	2
CO2	3	3	2	2	2	1	-	-	1	1	2	2
CO3	2	2	1	2	2	-	-	-	1	1	1	1
CO4	2	2	1	1	2	-	-	-	1	1	1	1
CO5	3	3	1	2	2	-	-	-	1	1	1	1
Avg	2.60	2.60	1.40	1.80	2.00	1.00	-	-	1.00	1.00	1.40	1.40

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	2
CO2	3	2	-	2
CO3	2	2	-	1
CO4	2	2	-	1
CO5	2	2	-	1
Avg	2.40	2.00	-	1.40



IMS Engineering College, Ghaziabad

Sub Code	KEC 351
Sub. Name	Electronic Devices Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand working of basic electronics lab equipment.	
CO2	Understand working of PN junction diode and its applications.	
CO3	Understand characteristics of Zener diode.	
CO4	Design a voltage regulator using Zener diode.	
CO5	Understand working of BJT, FET, MOSFET and apply the concept in designing of amplifiers	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	1	2	1	-	-	-	1	3
CO2	3	2	2	2	2	2	1	-	-	-	2	3
CO3	3	2	2	2	2	2	1	-	-	-	1	3
CO4	3	3	2	2	2	2	1	-	-	-	1	3
CO5	3	3	1	2	2	2	1	-	-	-	2	3
Avg	3.00	2.40	1.80	1.80	1.80	2.00	1.00	-	-	-	1.4	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	1
CO2	3	3	1	2
CO3	2	2	-	1
CO4	2	2	-	1
CO5	3	3	1	2
Avg	2.40	2.40	1.00	1.40



IMS Engineering College, Ghaziabad

Sub Code	KEC 352
Sub. Name	Digital System Design Lab

COURSE OUTCOMES		Bloom's Level
CO1	Design and analyze combinational logic circuits.	
CO2	Design & analyze modular combinational circuits with MUX/DEMUX, decoder, encoder.	
CO3	Design & analyze synchronous sequential logic circuits.	
CO4	Design & build mini project using digital ICs.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	-	-	-	3	1	2	3
CO2	3	2	2	3	3	-	-	-	3	1	2	3
CO3	2	3	3	2	2	-	-	-	2	1	3	3
CO4	3	3	3	2	2	-	-	-	3	1	2	3
Avg	2.75	2.75	2.75	2.25	2.25	-	-	-	2.75	1.00	2.25	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	3
CO2	3	2	1	3
CO3	3	3	1	3
CO4	3	3	1	3
Avg	3.00	2.50	1.00	3.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 353
Sub. Name	Network Analysis and Synthesis Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand basics of electrical circuits with nodal and mesh analysis.	
CO2	Appreciate electrical network theorems.	
CO3	Analyse RLC circuits.	
CO4	Determine the stability of an electrical circuit.	
CO5	Design network filters.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	1	1	-	-	-	1	3
CO2	3	3	3	2	2	1	1	-	-	-	1	3
CO3	3	3	3	2	2	1	1	-	-	-	1	3
CO4	3	3	3	2	2	1	1	-	-	-	1	3
CO5	3	3	3	2	2	1	1	-	-	-	2	3
Avg	3.00	3.00	3.00	2.00	2.00	1.00	1.00	-	-	-	1.20	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	1
CO2	3	3	-	1
CO3	3	3	-	1
CO4	3	3	-	2
CO5	3	3	-	2
Avg	3.00	3.00	-	1.40



IMS Engineering College, Ghaziabad

Sub Code	KNC 302
Sub. Name	Python Programming

COURSE OUTCOMES		Bloom's Level
CO1	To read and write simple Python programs.	
CO2	To develop Python programs with conditionals and loops.	
CO3	To define Python functions and to use Python data structures -- lists, tuples, dictionaries	
CO4	To do input/output with files in Python	
CO5	To do searching, sorting and merging in Python	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	2	-	1	-	3	-	-	-	-	1	2
CO2	1	1	-	-	-	3	2	2	-	-	-	-
CO3	-	1	-	1	-	3	2	-	2	-	1	-
CO4	1	-	-	1	-	-	2	2	-	-	-	-
CO5	-	2	-	-	-	-	3	3	-	-	1	2
Avg	1	1.20	-	1	-	3	2.2	2.2	2	-	1	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	3	-	3
CO2	2	2	-	3
CO3	2	2	-	3
CO4	2	2	-	2
CO5	2	2	-	2
Avg	2	2.2	-	2.6



IMS Engineering College, Ghaziabad

Semester IV

Sr. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	IA	Total	PS	IE	PE		
1.	KAS402/ KOE041-48	Maths-IV / Engg. Science Course	3	1	0	30	20	50		100		150	4
2.	KVE401/ KAS401	Universal Human Values/ Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3.	KEC401	Communication Engineering	3	0	0	30	20	50		100		150	3
4.	KEC402	Analog Circuits	3	1	0	30	20	50		100		150	4
5.	KEC403	Signal System	3	1	0	30	20	50		100		150	4
6.	KEC451	Communication Engineering Lab	0	0	2				25		25	50	1
7.	KEC452	Analog Circuits Lab	0	0	2				25		25	50	1
8.	KEC453	Signal System Lab	0	0	2				25		25	50	1
9.	KNC402/ KNC401	Python Programming/ Computer System Security	2	0	0	15	10	25		50			0
10.		MOOCs (Essential for Hons Degree)											
		TOTAL										900	21



IMS Engineering College, Ghaziabad

Sub Code	KOE 045
Sub. Name	Basics Data Structure & Algorithms

COURSE OUTCOMES		Bloom's Level
CO1	Understand and analyze the time and space complexity of an algorithm	
CO2	Understand and implement fundamental algorithms (including sorting algorithms, graph algorithms, and dynamic programming)	
CO3	Discuss various algorithm design techniques for developing algorithms	
CO4	Discuss various searching, sorting and graph traversal algorithms	
CO5	Understand operation on Queue , Priority Queue , D-Queue.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	1	1	-	2	1	1	3
CO2	3	3	3	3	3	2	1	-	2	1	2	3
CO3	3	3	3	3	3	2	1	-	2	1	2	3
CO4	3	3	3	3	3	1	1	-	2	1	1	3
CO5	3	3	3	3	3	2	1	-	2	1	2	3
Avg	3.00	3.00	3.00	3.00	3.00	1.60	1.00	-	2.00	1.00	1.60	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	3
CO2	3	3	1	3
CO3	3	3	2	3
CO4	3	3	1	3
CO5	3	3	2	3
Avg	3.00	3.00	1.40	3.00



IMS Engineering College, Ghaziabad

Sub Code	KVE 401
Sub. Name	Universal Human Values and Professional Ethics

COURSE OUTCOMES		Bloom's Level
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society	
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.	
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society	
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	
CO5	Distiguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	1	1	2	2	3	2	-	1	2
CO2	-	-	2	1	-	3	1	2	-	2	-	-
CO3	-	-	-	-	-	2	2	3	-	-	-	1
CO4	-	2	2	-	-	2	1	2	1	1	1	1
CO5	-	-	1	-	1	2	-	3	2	-	-	-
Avg	-	2.00	1.67	1.00	1.00	2.20	1.50	2.60	1.67	1.50	1.00	1.33

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	-	-	3	2
CO2	-	-	1	1
CO3	-	-	1	1
CO4	-	-	1	1
CO5	-	-	3	2
Avg	-	-	1.8	1.4



IMS Engineering College, Ghaziabad

Sub Code	KEC 401
Sub. Name	Communication Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Analyze and compare different analog modulation schemes for their efficiency and bandwidth	
CO2	Analyze the behavior of a communication system in presence of noise	
CO3	Investigate pulsed modulation system and analyze their system performance	
CO4	Investigate various multiplexing techniques	
CO5	Analyze different digital modulation schemes and compute the bit error performance	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	1	2	-	-	-	-	-	3
CO2	3	3	3	2	2	2	1	-	-	-	-	3
CO3	3	3	3	2	1	1	-	-	-	-	-	3
CO4	3	3	3	2	1	1	-	-	-	-	-	3
CO5	3	3	3	2	2	1	1	-	-	-	-	3
Avg	3.00	3.00	3.00	2.00	1.40	1.40	1.00	-	-	-		3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	1
CO2	3	2	-	1
CO3	3	3	-	1
CO4	3	2	-	1
CO5	3	3	-	1
Avg	3.00	2.40	-	1.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 402
Sub. Name	Analog Circuits

COURSE OUTCOMES		Bloom's Level
CO1	Understand the characteristics of diodes and transistors.	
CO2	Design and analyze various rectifier and amplifier circuits.	
CO3	Design sinusoidal and non-sinusoidal oscillators.	
CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits.	
CO5	Design LPF, HPF, BPF, BSF.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	1	-	-	-	-	1	2
CO2	3	3	2	3	2	1	-	-	-	-	1	2
CO3	3	3	2	3	2	-	-	-	-	-	1	2
CO4	3	3	3	3	2	1	-	-	-	-	1	3
CO5	3	3	3	3	2	-	-	-	-	-	1	3
Avg	3.00	3.00	2.60	3.00	2.00	1.00	-	-	-	-	1.00	2.40

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	1
CO2	3	3	1	2
CO3	3	3	1	2
CO4	3	3	1	2
CO5	3	3	1	1
Avg	3.00	3.00	1.00	1.60



IMS Engineering College, Ghaziabad

Sub Code	KEC 403
Sub. Name	Signal System

COURSE OUTCOMES		Bloom's Level
CO1	Analyze different types of signals.	
CO2	Analyze linear shift-invariant (LSI) systems.	
CO3	Represent continuous and discrete systems in time and frequency domain using Fourier series and transform.	
CO4	Analyze discrete time signals in z-domain.	
CO5	Study sampling and reconstruction of a signal.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	-	-	-	-	-	-	3
CO2	3	3	3	2	2	-	-	-	-	-	-	3
CO3	3	3	3	3	2	-	-	-	-	-	-	3
CO4	3	3	3	2	2	-	-	-	-	-	-	3
CO5	3	3	3	3	2	-	-	-	-	-	-	3
Avg	3	3	2.8	2.2	1.8	-	-	-	-	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1
CO2	3	3	1	1
CO3	3	3	1	1
CO4	3	2	1	1
CO5	3	1	1	1
Avg	3	2.2	1	1



IMS Engineering College, Ghaziabad

Sub Code	KEC 451
Sub. Name	Communication Engineering Lab

COURSE OUTCOMES		Bloom's Level
CO1	Analyze and compare different analog modulation schemes for their modulation factor and power.	
CO2	Study pulse amplitude modulation.	
CO3	Analyze different digital modulation schemes and can compute the bit error performance.	
CO4	Study and simulate the Phase shift keying	
CO5	Design a front end BPSK modulator and demodulator.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	-	-	-	-	-	-	3
CO2	3	3	3	2	2	-	-	-	-	-	-	3
CO3	3	3	3	2	2	-	-	-	-	-	-	3
CO4	3	3	3	2	2	-	-	-	-	-	-	3
CO5	3	3	3	2	2	-	-	-	-	-	-	3
Avg	3.00	3.00	3.00	2.00	2.00	-	-	-	-	-	-	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	3
CO2	3	2	-	2
CO3	3	2	-	2
CO4	3	2	-	3
CO5	3	2	-	2
Avg	3.00	2.00	-	2.40



IMS Engineering College, Ghaziabad

Sub Code	KEC 452
Sub. Name	Analog Circuits Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand the characteristics of transistors.	
CO2	Design and analyze various configurations of amplifier circuits.	
CO3	Design sinusoidal and non-sinusoidal oscillators	
CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits.	
CO5	Design ADC and DAC.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	2	-	-	-	-	-	-	2
CO2	3	2	2	2	2	-	-	-	-	-	-	2
CO3	3	2	2	2	2	-	-	-	-	-	-	2
CO4	3	2	2	2	1	-	-	-	-	-	-	2
CO5	3	2	2	2	1	-	-	-	-	-	-	2
Avg	3.00	2.00	1.80	1.80	1.60	-	-	-	-	-	-	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	1
CO2	2	3	-	2
CO3	2	3	-	2
CO4	3	3	-	3
CO5	3	3	-	2
Avg	2.40	2.80	-	2.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 453
Sub. Name	Signal System Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basics operation of MATLAB.	
CO2	Analysis the time domain and frequency domain signals.	
CO3	Implement the concept of Fourier series and Fourier transforms.	
CO4	Find the stability of system using pole-zero diagrams and bode diagram.	
CO5	Design frequency response of the system.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	1	3	-	-	-	2	-	-	3
CO2	3	3	2	2	3	-	-	-	2	-	-	3
CO3	3	3	2	2	3	-	-	-	2	-	-	3
CO4	3	3	2	2	3	-	-	-	2	-	-	3
CO5	3	3	2	2	3	-	-	-	2	-	-	3
Avg	3	3	1.8	1.8	3	-	-	-	2	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	2
CO2	3	3	-	2
CO3	3	3	-	2
CO4	3	3	-	2
CO5	3	3	-	2
Avg	3	3	-	2



IMS Engineering College, Ghaziabad

Sub Code	KNC 401
Sub. Name	Computer System Security

COURSE OUTCOMES		Bloom's Level
CO1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	
CO2	To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats	
CO3	To discover and explain mobile software bugs posing cyber security threats explain and recreate exploits, and to explain mitigation techniques.	
CO4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios	
CO5	To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	2	-	1	-	3	-	-	-	-	1	2
CO2	1	1	-	-	-	-	2	2	-	-	-	-
CO3	-	1	-	1	-	3	2	-	2	-	1	-
CO4	1	-	-	1	-	-	2	2	-	-	-	-
CO5	-	2	-	-	-	-	3	3	-	-	1	2
Avg	1	1.20	-	1	-	3	2.2	2.2	2	-	1	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	2	2
CO2	2	1	3	2
CO3	2	2	3	2
CO4	2	1	2	2
CO5	2	1	3	2
Avg	2.00	1.20	2.60	2.00



ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. V Semester Electronics and Communication Engineering

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KEC-501	Integrated Circuits	3	1	0	30	20	50		100		150	4
2	KEC-502	Microprocessor & Microcontroller	3	1	0	30	20	50		100		150	4
3	KEC-503	Digital Signal Processing	3	1	0	30	20	50		100		150	4
4	KEC-051-054	Department Elective-I	3	0	0	30	20	50		100		150	3
5	KEC-055-058	Department Elective-II	3	0	0	30	20	50		100		150	3
6	KEC-551	Integrated Circuits Lab	0	0	2				25		25	50	1
7	KEC-552	Microprocessor & Microcontroller Lab	0	0	2				25		25	50	1
8	KEC-553	Digital Signal Processing Lab	0	0	2				25		25	50	1
9	KEC-554	Mini Project/Internship **	0	0	2				50			50	1
10	KNC501/KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC
11		MOOCs (Essential for Honors Degree)											
		Total										950	22

**The Mini Project or Internship (4weeks) conducted during summer break after IV Semester and will be assessed during Vth Semester.

Course Code	Course Title
	Department Elective-I
KEC-051	Computer Architecture and Organization
KEC-052	Industrial Electronics
KEC-053	VLSI Technology
KEC-054	Advance Digital Design using Verilog
	Department Elective-II
KEC-055	Electronics Switching
KEC-056	Advance Semiconductor Device
KEC-057	Electronics Measurement & Instrumentation
KEC-058	Optical Communication



IMS Engineering College, Ghaziabad

Sub Code	KEC 501
Sub. Name	Integrated Circuits

COURSE OUTCOMES		Bloom's Level
CO1	Explain complete internal analysis of Op-Amp 741-IC.	
CO2	Examine and design Op-Amp based circuits and basic components of ICs such as various types of filter.	
CO3	Implement the concept of Op-Amp to design Op-Amp based non-linear applications and wave shaping circuits.	
CO4	Analyse and design basic digital IC circuits using CMOS technology.	
CO5	Describe the functioning of application specific ICs such as 555 timer, VCO IC 566 and PLL.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1	-	-	-	-	-	1	2
CO2	3	2	2	2	1	-	-	-	-	-	1	2
CO3	3	2	2	3	1	-	-	-	-	-	2	2
CO4	3	2	2	2	1	-	-	-	-	-	1	2
CO5	3	2	2	2	1	-	-	-	-	-	2	2
Avg	3.00	2.00	2.00	2.20	1.00	-	-	-	-	-	1.40	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	1
CO2	3	3	-	2
CO3	3	3	-	2
CO4	3	2	-	2
CO5	3	3	-	2
Avg	3.00	2.60	-	1.80



IMS Engineering College, Ghaziabad

Sub Code	KEC-502
Sub. Name	Microprocessor and Microcontroller

COURSE OUTCOMES		Bloom's Level
CO1	Demonstrate the basic architecture of 8085.	
CO2	Illustrate the programming model of microprocessors & write program using 8085 microprocessor.	
CO3	Demonstrate the basics of 8086 Microprocessor and interface different external Peripheral Devices like timer, USART etc. with Microprocessor (8085/8086).	
CO4	Compare Microprocessors & Microcontrollers, and comprehend the architecture of 8051 microcontroller	
CO5	Illustrate the programming model of 8051 and implement them to design projects on real time problems.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	2	1	1	-	1	2	1	3
CO2	3	2	1	1	3	1	1	-	1	2	2	3
CO3	3	2	2	2	3	1	1	-	1	2	2	3
CO4	2	1	1	1	3	2	1	-	1	2	2	3
CO5	3	1	2	2	3	2	1	-	1	2	2	3
Avg	2.8	1.6	1.4	1.4	1.4	1.4	1	-	1	2	1.8	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	2	1	2
CO2	1	2	1	1
CO3	2	2	1	1
CO4	3	2	2	2
CO5	3	2	2	1
Avg	2	2	1.4	1.4



IMS Engineering College, Ghaziabad

Sub Code	KEC 503
Sub. Name	Digital Signal Processing

COURSE OUTCOMES		Bloom's Level
CO1	Design and describe different types of realizations of digital systems (IIR and FIR) and their utilities.	
CO2	Select design parameters of analog IIR digital filters (Butterworth and Chebyshev filters) and implement various methods such as impulse invariant transformation and bilinear transformation of conversion of analog to digital filters.	
CO3	Design FIR filter using various types of window functions.	
CO4	Define the principle of discrete Fourier transform & its various properties and concept of circular and linear convolution. Also, students will be able to define and implement FFT i.e., a fast computation method of DFT.	
CO5	Define the concept of decimation and interpolation. Also, they will be able to implement it in various practical applications.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	-	-	-	-	-	-	-	3
CO2	3	3	3	2	-	-	-	-	-	-	-	3
CO3	3	3	3	2	-	-	-	-	-	-	-	3
CO4	3	3	3	2	-	-	-	-	-	-	-	3
CO5	3	3	3	2	-	-	-	-	-	-	-	3
Avg	3	3	3	2	-	-	-	-	-	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	3
CO2	3	3	-	3
CO3	3	3	-	3
CO4	3	3	-	3
CO5	3	3	-	3
Avg	3	3	-	3



IMS Engineering College, Ghaziabad

Sub Code	KEC 054
Sub. Name	Advance Digital Design using Verilog

COURSE OUTCOMES		Bloom's Level
CO1	Describe mixed logic circuits and their implementation	
CO2	Implement combinational circuits using mixed logic and Verilog	
CO3	Design sequential circuits using mixed logic and Verilog with mapping of Algorithm	
CO4	Understand faults and its elimination in sequential and combinational circuits	
CO5	Understand the working of programmable logic families	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1	-	-	-	-	-	-	1
CO2	3	3	3	3	3	1	1	1	1	2	2	1
CO3	3	3	3	3	3	1	1	1	2	2	2	1
CO4	3	3	3	3	3	2	1	1	1	1	1	1
CO5	3	1	1	1	1	1	1	1	1	1	-	1
Avg	3.00	2.60	2.40	2.40	2.20	1.25	1.00	1.00	1.25	1.50	1.66	1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1
CO2	3	3	1	3
CO3	3	3	1	3
CO4	3	3	2	3
CO5	3	2	1	1
Avg	3.00	2.60	1.20	2.20



IMS Engineering College, Ghaziabad

Sub Code	KEC 056
Sub. Name	Advance Semiconductor Devices

COURSE OUTCOMES		Bloom's Level
CO1	Explain the behavior of BJT and MOSFET in DC biasing and as CE amplifier circuit.	
CO2	Describe the Tunnel diode and IMPATT diode.	
CO3	Explain the basics of Light-Emitting Diode (LED) and evaluate the performance of Photoconductor and photodiode.	
CO4	Distinguish the performance of Photoconductor, photodiode, Phototransistor, Charge-Coupled Device	
CO5	Analyze the functioning of Metal-Semiconductor-Metal Photodetector.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2	-	-	-	-	-	1	2
CO2	2	1	1	2	1	-	-	-	-	-	1	2
CO3	2	2	2	2	1	-	-	-	-	-	2	3
CO4	2	2	2	2	1	-	-	-	-	-	2	3
CO5	2	2	2	2	1	-	-	-	-	-	1	2
Avg	2.00	1.80	1.80	2.00	1.20	-	-	-	-	-	1.40	2.40

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	3
CO2	2	1	-	2
CO3	3	2	-	3
CO4	3	2	-	3
CO5	2	1	-	2
Avg	2.60	1.60	-	2.60



IMS Engineering College, Ghaziabad

Sub Code	KEC 551
Sub. Name	Integrated Circuits Lab

COURSE OUTCOMES		Bloom's Level
CO1	Design different non-linear applications of operational amplifiers such as log, antilog amplifiers and voltage comparators.	
CO2	Explain and design different linear applications of operational amplifiers such as filters.	
CO3	Demonstrate the function of waveforms generator using op-Amp.	
CO4	Construct multivibrator and oscillator circuits using IC555 and IC566 and perform measurements of frequency and time.	
CO5	Design and practically demonstrate the applications based on IC555 and IC566.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	2	1	-	-	-	1	2	3
CO2	3	2	3	3	2	1	-	-	-	1	2	3
CO3	3	2	3	3	2	1	-	-	-	1	2	3
CO4	3	2	3	3	2	1	-	-	-	1	2	3
CO5	3	2	3	3	2	1	-	-	-	1	2	3
Avg	3	2	3	3	2	1	-	-	-	1	2	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	2
CO2	3	3	1	2
CO3	3	3	1	2
CO4	3	3	1	2
CO5	3	3	1	2
Avg	3	3	1	2



IMS Engineering College, Ghaziabad

Sub Code	KEC-552
Sub. Name	Microprocessor and Microcontroller Lab

COURSE OUTCOMES		Bloom's Level
CO1	To list and demonstrate arithmetic and logical operations on 8-bit data using microprocessor 8085.	
CO2	Examine 8085 & 8086 microprocessor and its interfacing with peripheral devices.	
CO3	State various conversion techniques using 8085 & 8086 and generate waveforms using 8085.	
CO4	Implement programming concept of 8051 Microcontroller.	
CO5	Design concepts to Interface peripheral devices with Microcontroller so as to design Microcontroller based projects.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	-	-	-	1	-	-	3
CO2	3	3	2	1	2	-	-	-	1	-	-	3
CO3	2	2	2	1	2	-	-	-	1	-	-	3
CO4	3	3	1	1	2	-	-	-	1	-	-	3
CO5	3	3	2	1	2	-	-	-	1	-	-	3
Avg	2.8	2.8	1.8	1	2	-	-	-	1	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	3
CO2	3	3	-	3
CO3	2	2	-	3
CO4	3	3	-	3
CO5	3	3	-	3
Avg	2.8	2.8	-	3



IMS Engineering College, Ghaziabad

Sub Code	KEC-553
Sub. Name	Digital Signal Processing Lab

COURSE OUTCOMES		Bloom's Level
CO1	Create and visualize various discrete/digital signals using MATLAB/Scilab.	
CO2	Implement and test the basic operations of Signal processing.	
CO3	Examine and analyse the spectral parameters of window functions	
CO4	Design IIR and FIR filters for band pass, band stop, low pass and high pass filters.	
CO5	Design the signal processing algorithms using MATLAB/Scilab.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	-	-	-	1	-	-	3
CO2	3	3	2	1	2	-	-	-	1	-	-	3
CO3	3	3	2	1	2	-	-	-	1	-	-	3
CO4	3	3	2	1	2	-	-	-	1	-	-	3
CO5	3	3	2	1	2	-	-	-	1	-	-	3
Avg	3	3	2	1	2	-	-	-	1	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	3
CO2	3	3	-	3
CO3	3	3	-	3
CO4	3	3	-	3
CO5	3	3	-	3
Avg	3	3	-	3



IMS Engineering College, Ghaziabad

Sub Code	KNC 501
Sub. Name	Constitution of India, Law and Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to Identify and explore the basic features and modalities about Indian constitution.	
CO2	Students will be able to Differentiate and relate the functioning of Indian parliamentary system at the center and state level.	
CO3	Students will be able to Differentiate different aspects of Indian Legal System and its related bodies.	
CO4	Students will be able to Discover and apply different laws and regulations related to engineering practices.	
CO5	Students will be able to Correlate role of engineers with different organizations and governance models.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	1	-	2
CO2	-	-	-	-	-	-	-	-	-	1	-	2
CO3	-	-	-	-	-	3	-	-	-	-	-	3
CO4	-	-	-	-	2	2	-	2	-	2	2	-
CO5	-	-	-	-	2	2	-	3	1	2	-	2
Avg	-	-	-	-	2.00	2.33	-	2.50	1.00	1.60	2.00	2.25

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	-
CO2	-	-	-	-
CO3	-	-	-	-
CO4	1	-	2	2
CO5	-	-	-	-
Avg	1.00	-	2.00	2.00



ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. VI Semester

Electronics and Communication Engineering

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KEC-601	Digital Communication	3	1	0	30	20	50		100		150	4
2	KEC-602	Control System	3	1	0	30	20	50		100		150	4
3	KEC-603	Antenna and Wave Propagation	3	1	0	30	20	50		100		150	4
4		Department Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I	3	0	0	30	20	50		100		150	3
6	KEC-651	Digital Communication Lab	0	0	2				25		25	50	1
7	KEC-652	Control System Lab	0	0	2				25		25	50	1
8	KEC-653	Elective Lab	0	0	2				25		25	50	1
9	KNC601/ KNC602	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC
10		MOOCs (Essential for Hous. Degree)											
		Total										900	21

Course Code

Course Title

Department Elective-III

KEC-061	Microcontroller & Embedded System Design
KEC-062	Satellite Communication
KEC-063	Data Communication Networks
KEC-064	Analog Signal Processing
KEC-065	Random Variables & Stochastic Process

Course Code

Elective Lab

KEC-653A	Measurement & Instrumentation Lab
KEC-653B	Cad for Electronics Lab
KEC-653C	Microcontroller & Embedded System Design Lab



IMS Engineering College, Ghaziabad

Sub Code	KEC-601
Sub. Name	Digital Communication

COURSE OUTCOMES		Bloom's Level
CO1	To formulate basic statistics involved in communication theory	
CO2	To demonstrate the concepts involved in digital communication.	
CO3	To explain the concepts of digital modulation schemes.	
CO4	To analyse the performance of digital communication systems.	
CO5	To apply the concept of information theory in digital systems.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	-	-	-	-	-	-	3
CO2	3	3	2	1	1	-	-	-	-	-	-	3
CO3	3	3	2	2	2	-	-	-	-	-	-	3
CO4	3	3	2	2	2	-	-	-	-	-	-	3
CO5	3	3	2	2	2	-	-	-	-	-	-	3
Avg	3	3	2	1.6	1.6	-	-	-	-	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1
CO2	3	3	1	1
CO3	3	3	1	1
CO4	3	2	1	1
CO5	3	1	1	1
Avg	3	2.2	1	1



IMS Engineering College, Ghaziabad

Sub Code	KEC 602
Sub. Name	Control System

COURSE OUTCOMES		Bloom's Level
CO1	Describe the basics of control systems along with different types of feedback and its effect. Additionally, they will also be able to explain the techniques such as block diagrams reduction, signal flow graph and modelling of various physical systems along with modelling of DC servomotor.	
CO2	Explain the concept of state variables for the representation of LTI system.	
CO3	Interpret the time domain response analysis for various types of inputs along with the time domain specifications.	
CO4	Distinguish the concepts of absolute and relative stability for continuous data systems along with different methods.	
CO5	Interpret the concept of frequency domain response analysis and their specifications.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	-	-	-	-	-	-	2
CO2	3	3	2	3	3	-	-	-	-	-	1	3
CO3	3	3	3	3	3	1	-	-	-	-	1	3
CO4	3	3	3	3	3	1	-	-	-	-	1	3
CO5	3	3	3	3	3	1	-	-	-	-	1	3
Avg	3.00	3.00	2.80	2.80	2.80	1.00	-	-	-	-	1.00	2.80

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	1
CO2	3	3	1	2
CO3	3	3	1	2
CO4	3	3	1	2
CO5	3	3	1	2
Avg	3.00	3.00	1.00	1.80



IMS Engineering College, Ghaziabad

Sub Code	KEC-603
Sub. Name	Antenna & Wave Propagation

COURSE OUTCOMES		Bloom's Level
CO1	Identify different coordinate systems and their applications in electromagnetic field theory to establish a relation between any two systems using the vector calculus.	
CO2	Explain the concept of static electric field, current and properties of conductors.	
CO3	Express the basic concepts of ground, space, sky wave propagation mechanism.	
CO4	Demonstrate the knowledge of antenna fundamentals and radiation mechanism of the antenna.	
CO5	Analyze and design different types of basic antennas.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	-	-	-	-	-	-	3
CO2	3	3	2	1	1	-	-	-	-	-	-	3
CO3	3	3	2	2	2	-	-	-	-	-	-	3
CO4	3	3	2	2	1	-	-	-	-	-	-	3
CO5	3	3	2	2	2	-	-	-	-	-	-	3
Avg	3.00	3.00	2.00	1.60	1.40	-	-	-	-	-	-	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1
CO2	3	3	1	1
CO3	3	2	1	1
CO4	3	2	1	1
CO5	3	1	1	1
Avg	3.00	2.00	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 063
Sub. Name	Data Communication Networks

COURSE OUTCOMES	
CO1	Identify the issues and challenges in the architecture of a network.
CO2	Analyze the services and features of various protocol layers in data layer.
CO3	Demonstrate the knowledge of multiple access to design a access technique for a particular application.
CO4	Realize protocols at different layers of a network hierarchy.
CO5	Recognize security issues in a network and various application of application layer.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	1	-	-	-	-	1	-	-
CO2	3	2	1	-	-	-	-	-	-	-	-	1
CO3	3	2	1	1	-	-	-	-	-	1	1	1
CO4	3	2	1	1	1	-	-	-	-	-	1	1
CO5	3	2	1	3	1	-	1	-	-	1	1	1
Avg	3.00	2.00	1.00	1.67	1.00	-	1.00	-	-	1.00	1.00	1.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-
CO2	3	-	-	-
CO3	3	1	-	-
CO4	3	1	-	-
CO5	3	2	-	1
Avg	3.00	1.33	-	1.00



IMS Engineering College, Ghaziabad

Sub Code	KOE-062
Sub. Name	Embedded System

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basics of embedded system and its structural units.	
CO2	Analyze the embedded system specification and develop software programs.	
CO3	Evaluate the requirements of the programming embedded systems, related software architecture.	
CO4	Understand the RTOS based embedded system design.	
CO5	Understand all the applications of the embedded system and designing issues.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	1	3	-	-	-	-	1
CO2	3	2	3	3	3	1	1	1	2	2	3	1
CO3	3	3	3	3	3	2	1	1	2	1	1	-
CO4	3	3	2	2	2	1	1	-	-	-	-	1
CO5	1	1	1	1	1	3	3	3	2	2	2	3
Avg	2.60	2.40	2.20	2.00	2.00	1.60	1.80	1.66	2.00	1.66	2.00	1.50

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	2	1
CO2	3	3	1	3
CO3	3	3	1	2
CO4	3	1	2	-
CO5	3	2	3	2
Avg	3.00	2.00	1.80	2.00



IMS Engineering College, Ghaziabad

Sub Code	KEC-651
Sub. Name	Digital Communication Lab

COURSE OUTCOMES		Bloom's Level
CO1	To formulate basic concepts of pulse shaping in digital communication.	
CO2	To identify different line coding techniques and demonstrate the concepts.	
CO3	To design equipment's related to digital modulation and demodulation schemes.	
CO4	To analyse the performance of various digital communication systems and evaluate the key parameters.	
CO5	To conceptualize error detection & correction using different coding schemes in digital communication.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	-	-	-	2	-	-	3
CO2	3	3	2	1	2	-	-	-	2	-	-	3
CO3	3	3	2	2	2	-	-	-	2	-	-	3
CO4	3	3	2	3	2	-	-	-	2	-	-	3
CO5	3	3	2	3	2	-	-	-	2	-	-	3
Avg	3	3	2	2	2	-	-	-	2	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	3
CO2	3	3	-	3
CO3	3	3	-	3
CO4	3	3	-	3
CO5	3	3	-	3
Avg	3	3	-	3



IMS Engineering College, Ghaziabad

Sub Code	KEC 652
Sub. Name	Control System Lab

COURSE OUTCOMES		Bloom's Level
CO1	Classify different tools in MATLAB along with the basic matrix operations used in MATLAB.	
CO2	Evaluate the poles and zeros on s-plane along with transfer function of a given system.	
CO3	Construct state space model of a linear continuous system.	
CO4	Evaluate the various specifications of time domain response of a given system.	
CO5	Appraise the steady state error of a given transfer function.	
CO6	Examine the relative stability of a given transfer function using various methods such as root locus, Bode plot and Nyquist plot.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	1	-	-	-	-	-	3
CO2	3	3	2	2	3	1	-	-	-	-	-	2
CO3	3	3	1	1	3	1	-	-	-	-	-	2
CO4	3	3	2	2	3	1	-	-	-	-	-	2
CO5	3	3	2	2	3	1	-	-	-	-	-	2
CO6	3	3	2	2	3	1	-	-	-	-	-	2
Avg	3.00	2.83	1.83	1.83	3.00	1.00	-	-	-	-	-	2.16

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	2
CO2	3	3	1	2
CO3	3	3	1	2
CO4	3	3	1	2
CO5	3	3	1	2
CO6	3	3	1	2
Avg	3.00	3.00	1.00	2.00



IMS Engineering College, Ghaziabad

Sub Code	KEC-653B
Sub. Name	CAD FOR ELECTRONICS LAB

COURSE OUTCOMES		Bloom's Level
CO1	Design and analyze the performance of different type of inverters.	
CO2	Design and analyze the performance of the basic logic gates using CMOS inverter circuit.	
CO3	Design and analyze the performance of the memory based digital circuits using CMOS inverter Circuit.	
CO4	Analyze the performance of the different configuration of MOS amplifier circuits.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	-	-	-	2	-	-	3
CO2	3	3	2	1	2	-	-	-	2	-	-	3
CO3	3	3	2	2	2	-	-	-	2	-	-	3
CO4	3	3	2	3	2	-	-	-	2	-	-	3
Avg	3	3	2	1.75	2	-	-	-	2	-	-	3

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	3
CO2	3	3	-	3
CO3	3	3	-	3
CO4	3	3	-	3
Avg	3	3	-	3



IMS Engineering College, Ghaziabad

Sub Code	KNC602
Sub. Name	INDIAN TRADITIONS, CULTURAL AND SOCIETY

COURSE OUTCOMES		Bloom's Knowledge Level
CO1	The course aims at imparting basic principles of thought process, reasoning and inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.	K3
CO2	To enable the students to understand the importance of our surroundings and encourage the students to contribute towards sustainable development.	K4
CO3	To sensitize students towards issues related to 'Indian' culture, tradition and its composite character.	K4
CO4	To make students aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.	K3
CO5	To acquaint students with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	3	-	3	-	2	-	-	-	2
CO2	-	-	-	-	-	3	3	2	-	-	-	-
CO3	-	-	2	-	-	3	3	1	3	-	-	-
CO4	-	-	2	-	-	3	3	2	3	-	-	1
CO5	-	-	2	-	-	3	3	2	3	-	-	2
Avg	-	-	2.00	3.00	-	3.00	3.00	1.80	3.00	-	-	1.67

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	-	2	-
CO2	1	-	-	-
CO3	-	1	-	-
CO4	1	-	2	-
CO5	-	1	2	-
Avg	1.00	1.00	2.00	-



ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. VII Semester

Electronics and Communication Engineering

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1.	KHU701/KHU702	HSMC-1*/HSMC-2*	3	0	0	30	20	50		100		150	3
2.	KEC-071-074	Department Elective –IV	3	0	0	30	20	50		100		150	3
3.	KEC-075-076	Department Elective –V	3	0	0	30	20	50		100		150	3
4.		Open Elective-II	3	0	0	30	20	50		100		150	3
5.	KEC-751X	Lab for Department Elective -	0	0	2				25		25	50	1
6.	KEC-752	Mini Project or Internship Assessment**	0	0	2				50			50	1
7.	KEC-753	Project I	0	0	8				150			150	4
		MOOCs (Essential for Hons. Degree)											
		Total										850	18

Course Code	Course Title
	Department Elective-I
KEC-071	Digital Image Processing
KEC-072	VLSI Design
KEC-073	Optical Network
KEC-074	Microwave & Radar Engineering
	Department Elective-II
KEC-075	Information Theory & Coding
KEC-076	Wireless & Mobile Communication
KEC-077	Micro & Smart Systems
KEC-078	Speech Processing

Course Code	***Elective Lab
KEC751A	Digital Image Processing Lab
KEC751B	VLSI Design Lab
KEC751C	Optical System and Networking Lab
KEC751D	Microwave & Radar Engineering Lab

***Students will opt one subject from the list of Department Elective-IV with its corresponding lab. i.e. if someone has opted Digital Image Processing (KEC071) from Department Elective-IV then it will be mandatory to opt the DIP Lab (KEC751A).



IMS Engineering College, Ghaziabad

Sub Code	KHU 702
Sub. Name	PROJECT MANAGEMENT & ENTREPRENEURSHIP

COURSE OUTCOMES		Bloom's Level
CO1	Students can understand the need, scope, motivation and types of Entrepreneurships.	
CO2	Students will know the Entrepreneurial Idea and Innovation.	
CO3	Students will have a clear idea about the Project Management.	
CO4	Students will be able to acquire knowledge about Project Financing.	
CO5	Students will be able to understand about the Social Entrepreneurship.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	3	2	1	3	2	3	3	2	2	2
CO2	1	2	2	2	2	2	2	3	3	2	2	2
CO3	1	1	2	1	2	2	2	2	3	3	3	3
CO4	2	2	2	2	2	3	3	3	2	2	2	2
CO5		1	1	2	2	3	2	3	3	3	3	3
Avg	0.67	1.5	1.5	2	2	3	2.5	3	2.5	2.5	2.5	2.5

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1		1	2
CO2	2		2	2
CO3	2		2	2
CO4	2		2	2
CO5	2		2	2
Avg	2		-	2



IMS Engineering College, Ghaziabad

Sub Code	KOE 073
Sub. Name	Machine Learning

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to apply the fundamental concepts of machine learning, well defined learning problems and its associated algorithms.	
CO2	Students will be able to apply and analyse Decision Tree Learning and Artificial Neural network.	
CO3	Students will be able to learn the Evaluation of Hypothesis Theory, Bayesian Learning and Bayesian Network.	
CO4	Students will be able to understand the concept of Computational Learning Theory and its associated algorithms.	
CO5	Students will be able to analyse and apply the concept of Genetic Algorithm and its role in Reinforcement Machine Learning.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	3	1	2	2	1	1	1	1	1
CO2	3	3	2	2	2	2	1	1	1	2	2	1
CO3	2	2	1	1	1	1	1	1	1	1	1	1
CO4	2	2	1	2	1	1	1	1	1	1	1	2
CO5	3	3	2	2	2	2	1	1	1	2	2	1
Avg	2.6	2.6	1.4	2	1.4	1.6	1.2	1	1	1	1.4	1.2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	1	1
CO2	2	2	2	1
CO3	2	1	2	1
CO4	2	2	2	2
CO5	3	2	3	2
Avg	2.4	1.6	2	1.4



IMS Engineering College, Ghaziabad

Sub Code	KOE-074
Sub. Name	RENEWABLE ENERGY RESOURCES

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to describe the fundamentals and main characteristics of renewable energy sources and their differences compared to fossil fuels.	
CO2	Students should be able to describe the basics of solar cell, solar power plant, solar thermal energy and applications and performance.	
CO3	Students should be able to describe geothermal energy, Magneto-hydrodynamics and fuel cells and their working, performance and limitations.	
CO4	Students should be able to describe Wind energy system and Bio mass system and their working, performance and limitations.	
CO5	Students should be able to describe Ocean thermal energy conversion (OTEC), wave and tidal wave: Availability, theory and working principle, performance and limitations.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	1	3	
CO2	3	3	2	
CO3	3	3	2	
CO4	3	3	2	
CO5	3	3	3	
Avg	3.00	2.60	2.40	



IMS Engineering College, Ghaziabad

Sub Code	KEC-076
Sub. Name	WIRELESS & MOBILE COMMUNICATION

COURSE OUTCOMES		Bloom's Level
CO1	Express the basic knowledge of mobile radio & cellular communication fundamentals and their application to propagation mechanisms, path loss models and multi-path phenomenon.	
CO2	Analyze the performance of various voice coding and diversity techniques.	
CO3	Apply the knowledge of wireless transmission basics to understand the concepts of equalization and multiple access techniques.	
CO4	Examine the performance of cellular systems being employed such as GSM, CDMA and LTE using various theoretical and mathematical aspects.	
CO5	Express basic knowledge of Mobile Adhoc networks and the existing & upcoming data communication networks in wireless and mobile communication domain.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	-	-	-	-	-	-	3
CO2	3	3	3	2	2	-	-	-	-	-	-	3
CO3	3	3	3	3	2	-	-	-	-	-	-	3
CO4	3	3	3	2	2	-	-	-	-	-	-	3
CO5	3	3	3	3	2	-	-	-	-	-	-	3
Avg	3.00	3.00	2.8	2.2	1.8	-	-	-	-	-	-	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1
CO2	3	3	1	1
CO3	3	3	1	1
CO4	3	2	1	1
CO5	3	1	1	1
Avg	3.00	2.20	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 072
Sub. Name	VLSI Design

COURSE OUTCOMES		Bloom's Level
CO1	Express the concept of VLSI design and CMOS circuits and delay study.	
CO2	Analyze mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits.	
CO3	Design and analyze various combinational & sequential circuits based on CMOS technology.	
CO4	Examine power logic circuits and different semiconductor memories used in present day technology.	
CO5	Interpret faults in digital circuits, Fault Models and various Testing Methodologies.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2	-	-	-	-	-	2	2
CO2	3	2	2	2	2	-	-	-	-	-	1	2
CO3	2	3	3	2	3	-	-	-	-	-	2	3
CO4	2	2	3	3	2	-	-	-	-	-	2	3
CO5	2	2	2	2	1	-	-	-	-	-	2	2
Avg	2.20	2.20	2.40	2.20	2.00	-	-	-	-	-	1.80	2.40

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	-	1
CO2	2	2	-	2
CO3	2	3	-	2
CO4	2	2	-	2
CO5	1	2	-	2
Avg	1.80	2.00	-	1.80



IMS Engineering College, Ghaziabad

Sub Code	KEC751B
Sub. Name	VLSI Design Lab

COURSE OUTCOMES		Bloom's Level
CO1	Designing of logic gates.	
CO2	Implementation of combinational and sequential circuits using CMOS logic.	
CO3	Analyze amplifier circuits.	
CO4	Design sequential circuits such as flip flop.	
CO5	Do the layout designing for physical analysis of the MOS transistor and MOS based circuits.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3	3	-	-	-	1	-	1	3
CO2	2	2	3	3	3	-	-	-	1	-	1	3
CO3	2	2	3	3	3	-	-	-	1	-	1	3
CO4	2	2	3	3	3	-	-	-	1	-	1	3
CO5	2	2	3	3	3	-	-	-	1	-	1	3
Avg	2.00	2.00	3.00	3.00	3.00	-	-	-	1.00	-	1.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	-	1
CO2	3	3	-	1
CO3	3	3	-	1
CO4	3	2	-	1
CO5	3	3	-	1
Avg	3.00	2.80	-	1.00



IMS Engineering College, Ghaziabad

Sub Code	KEC 752
Sub. Name	Mini Project/Internship

COURSE OUTCOMES		Bloom's Level
CO1	Understand working environment, techniques, and modern engineering tools necessary for engineering practice during training	
CO2	Apply relevant knowledge and skills, to design and develop mini project based on a real-life problem.	
CO3	Interact with professionals and non-professionals to develop technical, interpersonal and communication skills.	
CO4	Elaborate the objective and the work done during training.	
CO5	Discuss the result/output and prepare a mini project/Internship report.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	3	-	-	-	-	1	1	2
CO2	3	3	2	3	3	-	-	-	-	1	1	1
CO3	1	1	1	2	2	-	-	-	-	3	2	2
CO4	1	1	2	2	3	-	-	-	-	2	3	2
CO5	1	1	2	3	2	-	-	-	-	2	3	2
Avg	1.80	1.80	2.20	2.60	2.60	-	-	-	-	1.80	2.00	2.20

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	2
CO2	3	2	1	2
CO3	2	2	2	2
CO4	3	2	2	2
CO5	2	3	2	3
Avg	2.60	2.60	1.60	2.60



IMS Engineering College, Ghaziabad

ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. VIII Semester

Electronics and Communication Engineering

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1.	KHU801/KHU802	HSMC -1 [#] /HSMC-2 [#]	3	0	0	30	20	50		100		150	3
2.		Open Elective -III	3	0	0	30	20	50		100		150	3
3.		Open Elective -IV	3	0	0	30	20	50		100		150	3
4.	KEC-851	Project II	0	0	18				100		300	400	9
		MOOCs (Essential for Hons.)											
		Total										850	18



IMS Engineering College, Ghaziabad

Sub Code	KOE 083
Sub. Name	Entrepreneurship Development

COURSE OUTCOMES		Bloom's Level
CO1	Develop idea generation, creative and innovative skills.	
CO2	Aware of different opportunities and successful growth stories	
CO3	Learn how to start an enterprise and design business plans those are suitable for funding by considering all dimensions of business.	
CO4	Understand entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.	
CO5	Run a small enterprise with small capital for a short period and experience the science and art of doing business.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	2	2	1	2	2	1	1	2	2
CO2	-	1	-	-	1	1	2	2	2	2	3	2
CO3	-	1	2	1	2	2	2	1	3	2	3	3
CO4	1	2	-	2	-	1	2	-	2	1	2	1
CO5	1	2	2	1	1	1	2	3	3	2	2	2
Avg	1.00	1.40	1.67	1.50	1.50	1.20	2.00	2.00	2.20	1.60	2.40	2.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1	1	3	2
CO2	1	1	3	2
CO3	1	1	3	2
CO4	1	1	3	2
CO5	1	1	3	2
Avg	1.00	1.00	3.00	2.00



IMS Engineering College, Ghaziabad

Sub Code	KHU 801
Sub. Name	RURAL DEVELOPMENT: ADMINISTRATION AND PLANNING

COURSE OUTCOMES		Bloom's Level
CO1	Students can understand the definitions, concepts and components of Rural Development	
CO2	Students will know the importance, structure, significance, resources of Indian rural economy.	
CO3	Students will have a clear idea about the area development programmes and its impact	
CO4	Students will be able to acquire knowledge about rural entrepreneurship	
CO5	Students will be able to understand about the using of different methods for human resource planning	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	-	-	-	-	-	-	3
CO2	3	3	3	2	2	-	-	-	-	-	-	3
CO3	3	3	3	3	2	-	-	-	-	-	-	3
CO4	3	3	3	2	2	-	-	-	-	-	-	3
CO5	3	3	3	3	2	-	-	-	-	-	-	3
Avg	3.00	3.00	2.80	2.2	1.80	-	-	-	-	-	-	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	2	1	1
CO2	3	3	1	1
CO3	3	3	1	1
CO4	3	2	1	1
CO5	3	1	1	1
Avg	3.00	2.20	1.00	1.00



IMS Engineering College, Ghaziabad

Sub Code	KHU 801
Sub. Name	RURAL DEVELOPMENT: ADMINISTRATION AND PLANNING

COURSE OUTCOMES		Bloom's Level
CO1	Apply the relevant knowledge and skills, which are acquired within the technical area, to a given problem.	
CO2	Make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.	
CO3	Develop skills to communicate effectively and to present ideas clearly and coherently.	
CO4	Acquire collaborative skills through working in a team to achieve common goals.	
CO5	Write a comprehensive report based on the project implemented.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	1	1	2	3	2	3	3
CO2	3	3	3	3	2	2	-	2	3	2	3	3
CO3	3	3	3	3	2	3	1	2	3	2	3	3
CO4	3	3	3	3	2	2	-	2	3	2	3	3
CO5	3	3	3	3	2	2	1	2	3	3	3	3
Avg	3.00	3.00	3.00	3.00	2.20	2.00	1.00	2.00	3.00	2.20	3.00	3.00

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	3	3	2	3
CO2	3	3	2	3
CO3	3	3	2	3
CO4	3	2	1	3
CO5	3	3	2	3
Avg	3.00	2.80	1.80	3.00



IMS Engineering College, Ghaziabad

Department of MBA

2021-22

Course Outcomes (CO) mapping with

Programme Outcomes (PO)

and

Programme Specific Outcomes (PSO)



IMS Engineering College, Ghaziabad

Institute Vision and Mission

Vision

Our vision is to impart Vibrant, Innovative and Global Education to make IMS the world leader in terms of Excellence of Education, Research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a Centre of Excellence in Technical and Management Education.
- To inculcate in its students the qualities of Leadership, Professionalism, Executive Competence and Corporate understanding.
- To imbibe and enhance Human Values, Ethics and Morals in our students.
- To transform students into Globally Competitive Professionals



IMS Engineering College, Ghaziabad

Department Vision and Mission

Department of MBA

Vision

To develop IMSEC MBA as the best university-based management department imparting quality management education and providing sustainable solutions to the contemporary management problems of the business and the society.

Mission

- M1.** Equip the students with the fundamental management concepts and skills by adopting application based innovative pedagogy.
- M2.** Evolve and establish an environment of academic excellence, research, and innovation beneficial to students, faculty, and external stakeholders.
- M3.** Develop intellectual capital both scholarly and practice-oriented to meet the needs of emerging socio-economic environment.
- M4.** Provide transformational learning to create responsible and ethical thought leaders.
- M5.** Foster strong relationships with employers so as to understand their needs and thus, endeavour to bridge the skill gap between industry and academia.



Program Outcomes

PO1. Apply knowledge of management theories and practices to solve business problems.

PO2. Foster analytical and critical thinking abilities for data-based decision making.

PO3. Integrate and utilize qualitative and quantitative tools and concepts to investigate and solve critical business problems.

PO4. Ability to develop Value based Leadership ability.

PO5. Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of business.

PO6. Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.



UNIVERSITY SCHEME FOR 1st SEM SESSION 2021-22

Semester I

SN	Codes	SUBJECT	PERIODS			INTERNAL EVALUATION SCHEME				END SEMESTER EVALUATION		TOTAL	CREDIT
			L	T	P	CT	TA	PS	TOTAL	TE	PE		
1	KMBN101	MANAGEMENT CONCEPTS & ORGANISATIONAL BEHAVIOUR	4	0	0	30	20	0	50	100	0	150	3
2	KMBN102	MANAGERIAL ECONOMICS	4	0	0	30	20	0	50	100	0	150	3
3	KMBN103	FINANCIAL ACCOUNTING & ANALYSIS	3	1	0	30	20	0	50	100	0	150	3
4	KMBN104	BUSINESS STATISTICS & ANALYTICS	3	1	0	30	20	0	50	100	0	150	3
5	KMBN105	MARKETING MANAGEMENT	4	0	0	30	20	0	50	100	0	150	3
6	KMBN106	DESIGN THINKING	2	0	0	15	10	0	25	50	0	75	2
7	KMBN107	BUSINESS COMMUNICATION	3	1	0	30	20	0	50	100	0	150	3
LAB / PRACTICALS													
8	KMBN151	IT SKILLS LAB -I	0	0	5	0	0	0	50	50	-	100	3
9	KMBN152	MINI PROJECT -I	0	0	5	0	0	0	25	25	0	50	3
											1200	20	



Sub Code	KMBN101
Sub. Name	Management Concepts and Organisational Behavior

COURSE OUTCOMES

CO1	Developing understanding of managerial practices and their perspectives.
CO2	Understanding and Applying the concepts of organizational behaviour
CO3	Applying the concepts of management and analyze organizational behaviors in real world situations
CO4	Comprehend and practice contemporary issues in management.
CO5	Applying managerial and leadership skills among students

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	1	2	1	1	1
CO2	3	2	1	1	1	1
CO3	2	1	2		1	2
CO4	2	1	1	3	2	2
CO5	2	1	1	3	1	2
Average	2	1	1	2	1	2



Sub Code	KMBN102
Sub. Name	Managerial Economics

COURSE OUTCOMES	
CO1	tudents will be able to remember the concepts of micro economics and also able to understand the various micro economic principles to make effective economic decisions under conditions of risk and uncertainty.
CO2	The students would be able to understand the law of demand & supply & their elasticities , evaluate & analyse these concepts and apply them in various changing situations in industry . Students would be able to apply various techniques to forecast demand for better utilization of resources.
CO3	The students would be able to understand the production concept and how the production output changes with the change in inputs and able to analyse the effect of cost to business and their relation to analyze the volatility in the business world
CO4	The students would be able to understand & evaluate the different market structure and their different equilibriums for industry as well as for consumers for the survival in the industry by the application of various pricing strategic
CO5	The students would be able to analyse the macroeconomic concepts & their relation to micro economic concept & how they affect the business & economy.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	1	1	2	1
CO2	3	3	3	1	1	1
CO3	3	3	3	1	1	1
CO4	3	3	3	1	2	1
CO5	3	3	3	1	3	1
Average	3	3	3	1	2	1



IMS Engineering College, Ghaziabad

Sub Code	KMBN103
Sub. Name	Financial accounting and analysis

CO1	Understand and apply accounting concepts, principles and conventions for their routine monetary transaction.	
CO2	Understand about IFRS, Ind AS and IAS for Preparation & reporting of Financial Statements.	
CO3	Create and Prepare financial statements & cash flow in accordance with generally accepted accounting Principles.	
CO4	Analyse, Interpret and communicate the information contained in basic financial statements & explain limitations of such statements.	
CO5	Recognising various types of accounting & utilise the technology & social responsibility in facilitating & enhancing accounting & financial reporting processes.	

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	
CO1	3	2	3	1	3	2	NBA
CO2	3	2	3	1	3	2	
CO3	3	3	3	1	2	3	
CO4	3	3	3	1	3	3	
CO5	3	3	3	1	2	3	
Average	3	3	3	1	3	3	



Sub Code	KMBN104
Sub. Name	Business Statistics and Analytics

COURSE OUTCOMES

CO1	Gaining knowledge of basic concepts/fundamentals of business statistics.
CO2	To compute various measures of central tendency, Measures of Dispersion, Time Series Analysis, Index Number, Correlation and Regression analysis and their implication on Business performance.
CO3	Evaluating basic concepts of probability and perform probability theoretical distributions
CO4	To apply Hypothesis Testing concepts and able to apply inferential statistics- t, F, Z Test and Chi Square Test
CO5	To perform practical application by taking managerial decision and evaluating the Concept of Business Analytics.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3		1	
CO2	3	3	3		1	
CO3	3	3	3		1	
CO4	3	3	3		2	
CO5	3	3	3		3	
Average	3	3	3	#DIV/0!	2	#DIV/0!



IMS Engineering College, Ghaziabad

Sub Code	KMBN105
Sub. Name	Marketing Management

COURSE OUTCOMES							
CO1	Remember and comprehend basic marketing concepts						
CO2	Understand marketing insights on application of basic marketing concepts						
CO3	Able to apply and develop marketing strategies and plans						
CO4	Understand and Analyzing Business/ Consumer Markets and ability Identify & evaluate Market Segments and Targeting						
CO5	Develop skills to understand the current global and digital aspect of marketing.						
CO-PO Matrix							
	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
	CO1	3				1	1
	CO2	3	2	2	1	2	
	CO3	3	2	2		2	2
	CO4	1	3	3		2	
	CO5		2	2	1	3	3
	Average	2.5	2.25	2.25	1	2	2



Sub Code	KMBN106
Sub. Name	Design thinking

COURSE OUTCOMES

CO1	Gain in depth knowledge about creative thinking & design thinking in every stage of problem.
CO2	Applying design thinking to your real life problems/ situations in order to evolve an innovative & workable solutions.
CO3	Understand & Implement design thinking to your real life problems/ situations in order to evolve an innovative & workable solutions.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	3		3	2
CO2	3	2	3		3	2
CO3	3	3	3		2	3
Average	3	2	3	#DIV/0!	3	2



Sub Code	KMBN107
Sub. Name	Business Communication

COURSE OUTCOMES

CO1	Apply business communication strategies and principles to prepare effective communication for domestic and international business situations.
CO2	Analyse ethical, legal, cultural, and global issues affecting business Communication.
CO3	Develop an understanding of appropriate organizational formats and channels used in business communications
CO4	Gaining an understanding of emerging electronic modes of communication.
CO5	Developing effective verbal and non verbal communication skills.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	1			3	1
CO2	1	1			3	1
CO3	1	1			3	1
CO4	1	1			3	1
CO5	1	1			3	1
Average	1	1	#DIV/0!	#DIV/0!	3	1



UNIVERSITY SCHEME FOR 2nd SEM SESSION 2021-22

Semester II

SN	CODE	SUBJECT	PERIODS			INTERNAL EVALUATION SCHEME				END SEMESTER EVALUATION		TOTAL	CREDIT
			L	T	P	CT	TA	PS	TOTAL	TE	PE		
1	KMBN201	BUSINESS ENVIRONMENT & LEGAL ASPECT OF BUSINESS	4	0	0	30	20	0	50	100	0	150	3
2	KMBN202	HUMAN RESOURCE MANAGEMENT	4	0	0	30	20	0	50	100	0	150	3
3	KMBN203	BUSINESS RESEARCH METHODS	4	0	0	30	20	0	50	100	0	150	3
4	KMBN204	FINANCIAL MANAGEMENT & CORPORATE FINANCE	3	1	0	30	20	0	50	100	0	150	3
5	KMBN205	OPERATIONS MANAGEMENT	3	1	0	30	20	0	50	100	0	150	3
6	KMBN206	QUANTITATIVE TECHNIQUES FOR MANAGERS	3	1	0	30	20	0	50	100	0	150	3
7	KMBN207	DIGITAL MARKETING & E-COMMERCE	4	0	0	30	20	0	50	100	0	150	3
8	KMBN208	MANAGEMENT INFORMATION SYSTEMS	2	0	0	15	10	0	25	50	0	75	2
LAB / PRACTICALS													
9	KMBN251	IT SKILLS LAB-2	0	0	2	0	0	25	25	0	0	25	1
10	KMBN252	MINI PROJECT -2	0	0	3	0	0	25	25	0	25	50	2
											1200	26	

L/T/P – Lecture/Tutorial/Practical, CT/TA/PS- Class Test/Teachers Assessment/Practical Session, TE/PE- Term End/ Practical End



IMS Engineering College, Ghaziabad

Sub Code	KMBN201
Sub. Name	Business Environment and Legal Aspects of Business

COURSE OUTCOMES

CO1	Develop understanding & Fundamental knowledge about business environment.
CO2	Develop understanding on the concepts Business Environment & International business environment
CO3	Develop basic understanding of law of contract
CO4	Understanding provisions of companies act concerning incorporation & regulation of business organisation.
CO5	Able to analyse case laws in arriving at conclusions facilitating business decisions.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3			2	2	3
CO2	3			3	3	3
CO3	3	2	2	3	3	3
CO4	3	2	2	1	3	3
CO5	3	1	1	3	3	3
Average	3	2	2	2	3	3



IMS Engineering College, Ghaziabad

Sub Code	KMBN202
Sub. Name	Human Resource Management

COURSE OUTCOMES

CO1	Synthesize the role of human resources management as it supports the success of the organization including the effective development of human capital as an agent for organizational change
CO2	Demonstrate knowledge of laws that impact behaviour in relationships between employers and employees that ultimately impact the goals and strategies of the organization
CO3	Understand the role of employee benefits and compensation as a critical component of employee performance, productivity and organizational effectiveness
CO4	Show evidence of the ability to analyze, manage and problem solve to deal with challenges and complexities of the practice of collective bargaining
CO5	Demonstrate knowledge of practical application of training and employee development as it impacts organizational strategy and competitive advantage

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	2	2	2	3	2
CO2	2	2	2	1	2	2
CO3	2	2	2	1	3	2
CO4	2	2	2	1	3	2
CO5	2	2	2	1	2	2
Average	2	2	2	1	3	2



IMS Engineering College, Ghaziabad

Sub Code	KMBN203
Sub. Name	Business research Methods

COURSE OUTCOMES

CO1	Knowledge of concept / fundamentals for different types of research.
CO2	Applying relevant research techniques.
CO3	Understanding relevant scaling & measurement techniques and should use appropriate sampling techniques
CO4	Synthesizing different techniques of coding, editing, tabulation and analysis in doing research. .
CO5	Evaluating statistical analysis which includes various parametric test and non parametric test and ANOVA technique and prepare report.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3	1	2	2
CO2	3	3	3	1	2	2
CO3	3	3	2	1	2	2
CO4	3	3	2	1	2	2
CO5	3	3	2	1	2	2
Average	3	3	2	1	2	2



Sub Code	KMBN204
Sub. Name	Financial management and Corporate Finance

COURSE OUTCOMES

CO1	Understand the different basic concept / fundamentals of Corporate Finance
CO2	Understand the practical application of time value of money and evaluating long term investment decisions
CO3	Developing analytical skills to select the best source of capital ,its structure on the basis of cost of capital
CO4	Understand the use and application of different models for firm's optimum dividend payout.
CO5	Understand the recent trends of primary and secondary market and developing skills for application of various financial services.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3		3	2
CO2	2	2	3		2	2
CO3	3	3	3		1	2
CO4	3	3	2	1	2	2
CO5	3	1	2	1	2	2
Average	3	2	3	1	2	2



Sub Code	KMBN205
Sub. Name	Operations Management

COURSE OUTCOMES

CO1	Understand the role of operation in overall business strategy of the firm - the application of OM policies and techniques to the service sector as well as manufacturing firms
CO2	Understand and apply the concepts of material management, supply chain management and TQM perspectives
CO3	Identify and evaluate the key factors and their interdependence of these key factors in the design of effective operation systems
CO4	Analyze / Understand the trends and challenges of operations management in the current business environment
CO5	Apply techniques for effective utilization of operational resources and managing the processes to produce good quality products and services at competitive prices

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	2	1	2	3
CO2	3	2	2	1	3	2
CO3	3	2	2	3	2	3
CO4	3	2	2	3	3	3
CO5	3	3	3	1	2	1
Average	3	2	2	2	2	2



Sub Code	KMBN206
Sub. Name	Quantitative techniques for managers

COURSE OUTCOMES

CO1	Be able to understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.
CO2	To formulate linear programming problem and to find optimal solution by graphical simplex method.
CO3	Be able to build and solve Transportation Models and Assignment Models also to solve game theory problems by understanding pure and mix strategies.
CO4	To assign optimal sequence of difference jobs on different machines and develop understanding of queuing theory concepts.
CO5	To implement replacement of equipments at right time and able to implement project management concepts like CPM, PERT to reduce cost and time.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3		1	1
CO2	3	3	3		1	1
CO3	3	3	3		1	1
CO4	3	3	3		1	1
CO5	3	3	3		1	1
Average	3	3	3	#DIV/0!	1	1



IMS Engineering College, Ghaziabad

Sub Code	KMBN207
Sub. Name	Digital marketing and E commerce

COURSE OUTCOMES

CO1	Be able to understand the concept of Digital Marketing & E-commerce in today's scenario.
CO2	To able to create and maintain a good website and blog posts.
CO3	Be able to understand and apply SEO and Email Marketing in today's modern world Be able to identify critical issues related to service design such as identifying and managing customer service experience, expectations, perceptions and outcomes
CO4	To apply the Social Media Marketing techniques via various platforms
CO5	To implement various Analytics tools of online marketing

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	1	1
CO2	3	2	3	1	2	2
CO3	2	3	2	3	2	3
CO4	3	2	3	1	2	3
CO5	2	1	1	2	3	3
Average	3	2	2	2	2	2



IMS Engineering College, Ghaziabad

Sub Code	KMBN208
Sub. Name	Management Information System

COURSE OUTCOMES

CO1	Be able to understand the importance of information management in business and management.
CO2	To understand and formulate different types of information systems in business
CO3	Be able to apply the theory and concepts in practical with help of software
CO4	To apply various security and ethical issues with Information Systems
CO5	To synthesize applications on Spread sheet and database software

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1				1
CO2	3	1	1			2
CO3	3	1	1			2
CO4	3	1	1			2
CO5	3	1	1			2
Average	3	1	1	#DIV/0!	#DIV/0!	2



UNIVERSITY SCHEME FOR EVEN SEM 2 (2021-22)

MBA (MAIN) SECOND YEAR

MBA II Year Teaching and Evaluation Scheme
W.E.F. Academic Session 2021-22
(In Accordance with AICTE Model Curriculum)

SEMESTER III

SNo	Codes	SUBJECT	PERIODS			INTERNAL EVALUATION SCHEME				END SEMESTER EVALUATION		TOTAL	CREDIT
			L	T	P	CT	TA	PS	TOTAL	TE	PE		
1	KMBN301	STRATEGIC MANAGEMENT	4	0	0	30	20	0	50	100	0	150	3
2	KMBN302	INNOVATION AND ENTREPRENEURSHIP	4	0	0	30	20	0	50	100	0	150	3
3	KVE301	HUMAN VALUE AND PROFESSIONAL ETHICS	3	1	0	30	20	0	50	100	0	150	3
4		Elective -1 Specialization Group-1	4	0	0	30	20	0	50	100	0	150	3
5		Elective -2 Specialization Group-1	4	0	0	30	20	0	50	100	0	150	3
6		Elective -1 Specialization Group-2	4	0	0	30	20	0	50	100	0	150	3
7		Elective -2 Specialization Group-2	4	0	0	30	20	0	50	100	0	150	3
8	KMBN308	Summer Training Project Report & Viva Voce	0	2	0	0	50	0	50	0	100	150	4
		TOTAL										1200	25



Sub Code	KMBN301
Sub. Name	Strategic Management

COURSE OUTCOMES

CO1	Formulate organizational vision, mission, goals and values
CO2	Develop strategies and action plans to achieve an organization's vision, mission and goals
CO3	Develop powers of managerial judgement, how to assess business risk and improve ability to make sound decisions and achieve effective outcomes
CO4	Evaluate and revise programs and procedures in order to achieve organizational goals
CO5	Consider the ethical dimensions of strategic management process

CO-PO Matrix						
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1	1	1	2	2
CO2	3	2	3	2	2	3
CO3	3	3	2	3	2	3
CO4	2	3	3	2	3	3
CO5	2	1	1	2	3	3
Average	3	2	2	2	2	3



Sub Code	KMBNMK01
Sub. Name	Sales and retail management

COURSE OUTCOMES	
CO1	Students will develop knowledge, understanding and skills in Sales force management.
CO2	Acquainted with better understanding of implementation of sales and channel management strategies
CO3	Develop analytical skills for better decision alternatives in sales and channel management problems
CO4	Develop the knowledge, understanding and skills in retail management.
CO5	Acquainted with better understanding of implementation of retail management strategies and develop analytical skills for effective decision alternatives in retail operations.

CO-PO Matrix						
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	1	1
CO2	3	2	2	1	1	1
CO3	3	2	2	1	1	1
CO4	3	2	2	1	1	1
CO5	3	2	2	1	1	1
Average	3	2	2	1	1	1



IMS Engineering College, Ghaziabad

Sub Code	KMBNMK02
Sub. Name	Consumer Behavior and Marketing communication

COURSE OUTCOMES	
CO1	To understand consumer behavior and explain the consumer decision making process
CO2	To define external and internal influences on buying behavior
CO3	To provide an understanding of integrated marketing communications (IMC) and its influences on other marketing functions and other promotional activities.
CO4	Help to understand what advertising is and its role in advertising and brand promotion.
CO5	Understand the importance of message design and the creativity involved in message designing.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	2	2		3	3
CO2	3	3	3		3	3
CO3	3	3	3		3	3
CO4	3	2	2		3	3
CO5	3	2	2		2	2
Average	3	2	2	#DIV/0!	3	3



IMS Engineering College, Ghaziabad

Sub Code	KMBNMK03
Sub. Name	Digital and social media Marketing

COURSE OUTCOMES	
CO1	Students will develop an understanding of digital and social media marketing practices.
CO2	Students will develop understanding of the social media platforms
CO3	Students will acquire the skill to acquire and engage consumers online.
CO4	Students will develop understanding of building organizational competency by way of digital marketing practices and cost considerations.
CO5	Students will develop understanding of the latest digital practices for marketing and promotion

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	1	1
CO2	3	3	3	1	2	2
CO3	2	3	2	1	2	3
CO4	3	1	3	1	2	3
CO5	2	1	1	2	3	3
Average	3	2	2	1	2	2



IMS Engineering College, Ghaziabad

Sub Code	KMBNHR01
Sub. Name	Talent management

COURSE OUTCOMES

CO1	Knowledge of Talent Management Processes
CO2	Understanding for analysis of the impacts of Talent management in the organization
CO3	Competency to implement Talent management practices
CO4	Competency to develop leadership qualities among subordinate
CO5	Knowledge about the reward system to support Talent management

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	2	1		1	1
CO2	2	1	2		1	2
CO3	2	1	2	1	1	2
CO4	2	1	1	2	2	2
CO5	1	1	1		1	1
Average	2	1	1	2	1	2



IMS Engineering College, Ghaziabad

Sub Code	KMBNHR02
Sub. Name	Performance and reward management

COURSE OUTCOMES	
CO1	knowledge of Performance management and performance appraisal
CO2	Competency to understand the importance of performance management
CO3	Knowledge about the Compensation and Reward systems in the organization
CO4	Competency to implement the effective reward systems in the organization
CO5	Ability to explain the relevance of competency mapping and understanding its linkage with career development

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	1	1		2	1
CO2	2	1	1		2	1
CO3	2	1	2		2	2
CO4	1	1	1		2	2
CO5	2	1	2		1	1
Average	2	1	1	#DIV/0!	2	1



IMS Engineering College, Ghaziabad

Sub Code	KMBNHR03
Sub. Name	Employee relations and labour laws

COURSE OUTCOMES

CO1	Knowledge of Industrial Relation framework .
CO2	Competency to understand the importance of Employee Relation within the perspective of Industrial Relation
CO3	Knowledge about relevant Laws of HR management
CO4	Competency to interpreted and implement the Labour Laws within organization
CO5	Competency to use Collective Bargaining and Grievance redressal Mechanism

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3				3	1
CO2	3				3	1
CO3	3	3	3		3	1
CO4	3	3	3		3	1
CO5	3	3	3		3	2
Average	3	3	3	#DIV/0!	3	1



IMS Engineering College, Ghaziabad

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Sub Code	KMBNFM01			
Sub. Name	Investment analysis and Portfolio Management			

CO1	Understand about various investment avenues.
CO2	Understand the value of assets and manage investment portfolio.
CO3	Understand various models of investment & its application.
CO4	Understand and create various investment strategies on the basis of various market conditions.
CO5	Measure riskiness of a stock or a portfolio position.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1	3		1	
CO2	3	3	3		3	
CO3	3	3	3		3	
CO4	3	3	3		3	
CO5	3	3	3		3	
Average	3	3	3	#DIV/0! !	3	#DIV/0!



IMS Engineering College, Ghaziabad

Sub Code	KMBNFM02
Sub. Name	Tax planning and management

COURSE OUTCOMES

CO1	Understand about various tax provisions & Tax Planning.
CO2	Understand the scope of tax planning.
CO3	Have knowledge about various tax dates, Rates & Forms.
CO4	Measure corporate tax & Taxation in case of business restructuring.
CO5	Understand how GST can be calculated & managed.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3				2	
CO2	3	2	3		2	
CO3	3	3	3		2	
CO4	3	3	3			
CO5	3	3	3			
Average	3	3	3		3	



IMS Engineering College, Ghaziabad

Sub Code	KMBNFM 03
Sub. Name	Financial Market & Services
CO1	Recognize the functioning and working of various financial institutions in India thus in turn connecting it to the working of Indian economy.
CO2	Interpret the knowledge about the working of various financial instruments in the primary and secondary market in India as well as foreign market.
CO3	Classify about the working of micro finance instruments in India as well as foreign market
CO4	Interpret the knowledge about the banking industry and demonstrate the various market demand analysis

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	1	1	2	2
CO2	2	2	2		2	2
CO3	1	1	1		2	2
CO4	2	2	2		2	2
Average	2	2	2	1	2	2



Sub Code	KMBNIB01
Sub. Name	International Business Management

COURSE OUTCOMES

CO1	To get an overview of the key issues and concepts of International Business
CO2	Understand how and why the world's countries differ.
CO3	Understand the monetary framework in which international business transactions are conducted .
CO4	Understand the role of International Organizations and Regional Trade blocks
CO5	Implement the decisions for international operations in a superior manner

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	2	2	1	3	3
CO2	1	2	2	1	3	3
CO3	2	3	2	1	3	3
CO4	1	2	2	1	3	3
CO5	2	3	2	1	3	3
Average	1	2	2	1	3	3



IMS Engineering College, Ghaziabad

Sub Code	KMBN IB 02
Sub. Name	International Business Management

COURSE OUTCOMES

CO1	To get an overview of the key issues and concepts of International Business
CO2	Understand how and why the world's countries differ.
CO3	Understand the monetary framework in which international business transactions are conducted .
CO4	Understand the role of International Organizations and Regional Trade blocks
CO5	Implement the decisions for international operations in a superior manner

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	1	1
CO2	3	2	2	1	1	1
CO3	3	2	2	1	1	1
CO4	3	2	2	1	1	1
CO5	3	2	2	1	1	1
Average	3	2	2	1	1	1



IMS Engineering College, Ghaziabad

UNIVERSITY SCHEME FOR 4th SEM SESSION 2021-22

SEMESTER IV											
S. No.	Code	Course Title	Evaluation Scheme								Credit
			Sessional Exams								
			L	T	P	CT	TA	Total	ESE	Total	
1	KMB401	Project Management	4	0	0	30	20	50	100	150	3
2	KMB402	Entrepreneurship Development	4	0	0	30	20	50	100	150	3
3	RVE401	Universal Human Values and Professional Ethics	4	0	0	30	20	50	100	150	3
4		Specialization Group -1	4	0	0	30	20	50	100	150	3
		Elective 4*									
5		Specialization Group -1	4	0	0	30	20	50	100	150	3
		Elective 5*									
6		Specialization Group -2	4	0	0	30	20	50	100	150	3
		Elective 3*									
7	KMB405	Research Project Report and Viva Voce	4	0	0	0	0	100	200	300	6
		TOTAL							800	1200	24



IMS Engineering College, Ghaziabad

Sub Code	KMB401
Sub. Name	Project management

COURSE OUTCOMES

CO1	Students will be able to understand the characteristics of Project and Project Management Knowledge
CO2	The students will understand the managerial process along with tools & techniques used in Project management Knowledge
CO3	Students will understand the scheduling and monitoring process in Project. They will be able to apply PERT and CPM method for project scheduling Comprehending
CO4	Students will understand the perspectives in which optimum decisions are to be taken in case of risks with planned activities in project.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	1	1	2	2
CO2	2	2	2		2	2
CO3	3	2	2		2	2
CO4	3	3	3		2	2
Average	3	2	2	1	2	2



IMS Engineering College, Ghaziabad

Sub Code	KMB402
Sub. Name	Entrepreneurship Development

COURSE OUTCOMES

CO1	Developing understanding of basic concepts of entrepreneurship.
CO2	Develop knowledge on Entrepreneurial Finance, Assistance and role of Entrepreneurial Development Agencies
CO3	Develop understanding of converting an Idea to an opportunity and develop understanding of various funding sources
CO4	Comprehend and develop skills to Develop a Business Plan
CO5	Students to have a basic understanding of Launching a New Venture

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1	1		1	2
CO2	3	1	1		1	2
CO3	3	2	1		1	2
CO4	3	2	1		1	2
CO5	3	3	1		1	2
Average	3	2	1	#DIV/0!	1	2



IMS Engineering College, Ghaziabad

Sub Code	KMBMK04
Sub. Name	Marketing of services

COURSE OUTCOMES

CO1	Understand and explain the nature and objectives of Service Marketing
CO2	Use critical analysis to percieve service shortcomings in reference to ingredients to create service excellence
CO3	Be able to identify critical issues related to service design such as identifying and managing customer service experience, expectations, perceptions and outcomes
CO4	Provide a theoretical and practical basis for assessing service performance using company examples
CO5	Identify and discuss characteristics and challenges of managing service firms in modern world

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	1	1
CO2	3	2	3	1	2	2
CO3	2	3	2	3	2	3
CO4	3	2	3	1	2	3
CO5	2	1	1	2	3	3
Average	3	2	2	2	2	2



IMS Engineering College, Ghaziabad

Sub Code	KMBMK05
Sub. Name	Marketing Analytics

COURSE OUTCOMES

CO1	Students will develop the skills in Marketing Analytics
CO2	Students will be acquainted with better understanding of real life marketing data and its analysis
CO3	Students will develop analytical skill for effective marketing decision making in real life environment

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	1	1
CO2	3	3	3	2	2	2
CO3	2	3	2	1	1	3
Average	3	3	2	1	1	2



IMS Engineering College, Ghaziabad

Sub Code	KMBHR04
Sub. Name	Strategic HRM

COURSE OUTCOMES

CO1	Understanding the dimensions of strategic HRM
CO2	Applying the learning of SHRM in organizational context
CO3	Able to evaluate the impacts of SHRM on competitive advantages
CO4	Desired level of expertise on organizational knowledge management through SHRM
CO5	Understanding the International culture in SHRM

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	2	2	3	2
CO2	3	3	2	2	3	2
CO3	3	3	2	1	2	2
CO4	2	2	2	1	1	2
CO5	2	2	1	1	3	2
Average	3	3	2	1	2	2



Sub Code	KMBHR05
Sub. Name	International HRM

COURSE OUTCOMES

CO1	Understanding the contexts of International HRM
CO2	Knowledge about the HR Processes in International Context
CO3	Able to evaluate the impacts of Globalisation on HRM
CO4	Desired level of expertise on organizational processes
CO5	Understanding the international culture

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	1	3	2
CO2	3	2	2	1	2	2
CO3	2	3	3	1	3	2
CO4	2	2	2	2	1	2
CO5	2	2	2	1	3	2
Average	2	2	2	1	2	2



IMS Engineering College, Ghaziabad

Sub Code	KMBFM04
Sub. Name	Working Capital Management

COURSE OUTCOMES

CO1	Understand the objectives & functioning of WCM
CO2	Investigate funds flow cycles and their impact on working capital management objectives.
CO3	Compare and contrast the relative merits of alternative working capital policies and the likely short-term and long-term impact on the firm.
CO4	Formulate appropriate working capital management policies to achieve corporate objectives.
CO5	Apply corporate cash management, accounts receivable management, bank relations, and inventory management techniques to maximize the share holders' value.

CO-PO Matrix

Course Outcome	PO1	P O2	PO3	PO4	PO5	PO6
CO1	3	3	3		2	3
CO2	2	2	3		2	3
CO3	3	3	3		2	3
CO4	3	3	2		2	2
CO5	3	3	2	1	2	2
Average	3	3	3	1	2	3



Sub Code	KMBFM05
Sub. Name	Financial derivatives

COURSE OUTCOMES

CO1	Understand about various Derivative instruments
CO2	Understand various future and option strategies of hedging risk
CO3	Have knowledge about various models and techniques and its applications
CO4	Apply various swap strategies to reduce risk

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3		1	2
CO2	3	3	3		1	2
CO3	3	3	3		3	2
CO4	3	3	3		3	2
Average	3	3	3	#DIV/0!	2	#DIV/0!



Sub Code	KVE401
Sub. Name	UHVPE

COURSE OUTCOMES

CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1			3	2	1
CO2				3	1	1
CO3			1	3	1	1
CO4		1		3		1
CO5				1	2	2
Average	1	1	1	3	2	1



IMS Engineering College, Ghaziabad

Department of Mechanical Engineering

2021-22



IMS Engineering College, Ghaziabad

Course Outcomes (CO)
mapping with
Programme Outcomes (PO)
and
Programme Specific
Outcomes (PSO)



Institute Vision and Mission

Vision

Our vision is to impart vibrant innovative and global education and to make IMS the world leader in terms of excellence of education, research and to serve the nation in the 21st century.

Mission

- To develop IMSEC as a centre of excellence in technical and management education.
- To inculcate in its students, the qualities of leadership, professionalism, corporate understanding & executive competence.
- To imbibe & enhance human values, ethics & morals in our students.
- To transform students into globally competent professionals.



Department Vision and Mission

Vision

Our vision is to provide excellent education that creates the new opportunities for students to meet the existing and futuristic challenges in the field of mechanical engineering and to make them global leaders.

Mission

1. To impart quality education to the students in the field of mechanical engineering and enhance their domain knowledge as well as soft skills to make them globally competitive mechanical engineers.
2. Respond effectually to the needs of the industry with changing technology scenario.
3. Encouraging culture of continuous teaching and learning process by adopting state of the art technology and methodology.
4. To develop the professional ethics and human values in the students for the welfare of society.

Program Educational Objectives

1. To prepare students for current industry needs as well as making them successful entrepreneur.
2. To provide sound knowledge to students in mathematics, science and engineering fundamentals necessary to formulate, solve and analyse engineering problems and to pursue higher studies.
3. To develop creativity and problem solving ability among students by utilizing their technical competence in design, manufacturing and product development.
4. To promote awareness in students for life-long learning and to introduce them about professional issues of mechanical engineering including ethics, global economy and emerging technologies.



IMS Engineering College, Ghaziabad

5. To inculcate spirit of innovation among students so that they can solve various industrial problem.

Program Specific Outcomes (PSO)

1. Graduate shall have an ability to enhance their technical and professional skills and utilize them to provide solution for real life problems in design, fabrication, testing and operation of basic mechanical systems/processes.
2. Graduate shall acquire the ability of entrepreneurship to start an industry based on mechanical engineering in the areas of production, manufacturing and allied areas.



B.Tech. (Mechanical Engineering)

SEMESTER- III

SL No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KOE031-38/ KAS302	Engg. Science Course/Maths IV	3	1	0	30	20	50		100		150	4
2	KAS301/ KVE301	Technical Communication/Universal Human Values	2	1	0	30	20	50		100		150	3
			3	0	0								
3	KME301	Thermodynamics	3	1	0	30	20	50		100		150	4
4	KME302	Fluid Mechanics & Fluid Machines	3	1	0	30	20	50		100		150	4
5	KME303	Materials Engineering	3	0	0	30	20	50		100		150	3
6	KME351	Fluid Mechanics Lab	0	0	2				25		25	50	1
7	KME352	Material Testing Lab	0	0	2				25		25	50	1
8	KME353	Computer Aided Machine Drawing-I Lab	0	0	2				25		25	50	1
9	KME354	Mini Project or Internship Assessment*	0	0	2			50				50	1
10	ENC301/ ENC302	Computer System Security/Python Programming	2	0	0	15	10	25		50			0
11		MOOCs (Essential for Hons. Degree)											
		Total										950	22

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.



IMS Engineering College, Ghaziabad

Sub Code	KOE-038
Sub. Name	Electronics Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Understand the concept of PN junction and special purpose diodes	
CO2	Study the application of conventional diode and semiconductor diode.	
CO3	Analyse the I-V characteristics of BJT and FET.	
CO4	Analyse the of Op-Amp, amplifiers, integrator, and differentiator.	
CO5	Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2		1	2						1	
CO2	3	2		2	2						1	
CO3	3	2		2	2						1	
CO4	3	2		1	2						1	
CO5	2	1		2	1						1	
Avg	2.80	1.80		1.60	1.80						1.00	

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1		1	1
CO2		1	1
CO3		2	2
CO4	2	2	2
CO5	-	-	-
Avg	2.00	1.50	1.50



IMS Engineering College, Ghaziabad

Sub Code	KAS 301
Sub. Name	Technical Communication

COURSE OUTCOMES		Bloom's Level
CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as engineers.	
CO2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.	
CO3	Students would imbibe inputs by presentation skills to enhance confidence in face diverse audience.	
CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.	
CO5	It would enable them to evaluate their efficiency as fluent & efficient communicators by learning the voice-dynamics.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2		1	2	1	1	3	3	2	1
CO2	1	2	3	3	3	2				3	2	3
CO3	1	2	3	2	3	2	1	2	3	3	2	3
CO4	2	2	3	1	3	3		1	3	3	3	3
CO5	1	1	3	1	1		3	3	3	3	1	3
Avg	1.20	1.60	2.80	1.75	2.20	2.25	1.67	1.75	3.00	3.00	2.00	2.60

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	3	2
CO2	1	3	2
CO3	2	3	2
CO4	2	3	2
CO5	1	1	1
Avg	1.60	2.60	1.80



IMS Engineering College, Ghaziabad

Sub Code	KME 301
Sub. Name	Thermodynamics

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand the concept of systems, surroundings and boundaries alongwith zeroth law of thermodynamics and first law of thermodynamics.	
CO2	Students will be able to understand the concept of second law of thermodynamics and deepknowledge about entropy.	
CO3	Students will be able to understand the concept of Availability and Irreversibility, exergy analysis and thermodynamic relations.	
CO4	Students will be able to understand the properties of steam and cycle based on power productionby using the heat energy of steam.	
CO5	Students will be able to understand the concept of refrigeration cycles and performance ofvapour compression refrigeration cycle.	

CO-PO Matrix													
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO1	2	2	2	2	1	1						2	
CO2	3	2	2	1	1	1						2	
CO3	2	2	2	1	2	2	1					1	
CO4	2	2	1	2	1	2	1					2	
CO5	3	2	2	1	2	1	1					2	
Avg	2.40	2.00	1.80	1.40	1.40	1.40	1.00	#DIV/0!	#####	#####	####	####	1.80

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	1	1	2
Avg	1.80	1.80	2.00



IMS Engineering College, Ghaziabad

Sub Code	KME-302
Sub. Name	Fluid Mechanics & Fluid Machines

COURSE OUTCOMES		Bloom's Level
CO1	Learn about the application of mass and momentum conservation laws for fluid flows.	
CO2	Understand the importance of dimensional analysis.	
CO3	Obtain the velocity and pressure variations in various types of simple flows.	
CO4	Analyze the flow in water pumps and turbines.	
CO5	Mathematically analyze simple flow situations.	
CO6	Evaluate the performance of pumps and turbines.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1								1
CO2	2	2	1	1	2		1					2
CO3	2	2	2	3	2	1	1					2
CO4	3	3	2	3	2	1	1					3
CO5	2	2	3	2	2	1	1					3
CO6	2	2	1	2	1	1						3
Avg	2.33	2.17	1.67	2.00	1.80	1.00	1.00	#DIV/0!	#####	#####	#####	2.33

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2		3
CO2	2	1	2
CO3	2		3
CO4	2	1	3
CO5	3		2
CO6	2	1	2
Avg	2.17	1.00	2.50



IMS Engineering College, Ghaziabad

Sub Code	KME-303
Sub. Name	Materials Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand basics of material structure, crystallography, imperfections and different mechanical properties with their testing.	
CO2	Students should have ability to explain the failure theory, fracture, fatigue properties and NDT testing for different materials.	
CO3	Students should be ready to acquire the knowledge of solidification, phase & equilibrium diagram for different materials	
CO4	Students will be able to understand the various heat treatment processes for ferrous and nonferrous materials and their alloys.	
CO5	Students should understand the concept of basic properties, structure & applications of ferrous and nonferrous metals and their alloys.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	3	2	2		3	3	2	2
CO2	3	2	1	2	3	1	1	1	3	2	1	2
CO3	3	2		2	2	2	1		2	1	1	1
CO4	2	1	1	2	1	2	1		2	2	2	2
CO5	1	1	1	1	2		1	1		3	3	3
Avg	2.40	1.60	1.00	1.80	2.20	1.75	1.20	1.00	2.50	2.20	1.80	2.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	3	3
CO3	2	3	3
CO4	2	3	2
CO5	1	1	2
Avg	2.20	2.60	2.60



IMS Engineering College, Ghaziabad

Sub Code	KME-351
Sub. Name	Fluid Mechanics Lab

COURSE OUTCOMES		Bloom's Level
CO1	Measure the properties of fluids	
CO2	Compare the actual discharge with theoretical discharge through pipes and notch and weirs.	
CO3	Validate the Bernoulli's theorem and Darcy's law.	
CO4	Measure the loss of fluid flow energy in pipe chain.	
CO5	Measure the efficiency of turbines on different loads.	
CO6	Measure the performance of the pump on different loads.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	1								1
CO2	2	2	1	1			1					2
CO3	2	2	2	3	1	1	1					2
CO4	3	3	2	3	1	1	1					3
CO5	2	2	3	2	1	1	1					3
CO6	2	2	1	2	1	1						3
Avg	2.00	2.17	1.67	2.00	1.00	1.00	1.00	#DIV/0!	#####	#####	#####	2.33

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	1	2
CO2	2	1	2
CO3	2		2
CO4	2	1	2
CO5	2		2
CO6	2	1	2
Avg	2.00	1.00	2.00



IMS Engineering College, Ghaziabad

Sub Code	KME-352
Sub. Name	Material Testing Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to analyse different types of strength testing on UTM machine.	
CO2	Students should have ability to explain and analyse the Impact test on impact testing machinelike Charpy, Izod or both.	
CO3	Students should be ready to aquire the knowledge to measure the Hardness of given specimenusing Rockwell and Vickers/Brinell testing machines.	
CO4	Students will be able to understand the Spring index test on spring testing machine.	
CO5	Students will be able to analyse the Fatigue test and torsion test on fatigue testing & torsiontesting machine.	
CO6	Students should have ability to explain the NDT testing for different materials.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	1	1	2	1	1	2	2
CO2	3	2	1	2	3	1	1	1	3	2	1	2
CO3	3	2	2	2	2	2	1	2	2	1	1	1
CO4	2	1	1	2	1	2	1	1	2	2	2	2
CO5	1	1	1	1	2		1	1	1	3	3	3
CO6	3	2	2	2	2	2	1	1	2	1	1	1
Avg	2.50	1.67	1.50	1.83	2.17	1.60	1.00	1.33	1.83	1.67	1.67	1.83

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	3
CO3	2	2	3
CO4	2	1	3
CO5	3	2	2
CO6	3	2	2
Avg	2.50	1.83	2.50



IMS Engineering College, Ghaziabad

Sub Code	KME 353
Sub. Name	Computer Aided Machine Drawing-I

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to understand the difference between design and drafting, views, quadrant etc.	
CO2	The students will be able to understand the projection of different machine elements.	
CO3	The students will be able to understand the different types of fastener and their projection.	
CO4	The students will learn to draft coupling, riveting etc.	
CO5	The students will be able to understand assembly of different machines' elements with assemblydrawing.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1		3	2			2					
CO2	2	1		2			1					
CO3		2	3	2	1							
CO4		3		3	3				1		1	1
CO5	1		3	3	2	1	2					
Avg	1.33	2.00	3.00	2.40	2.00	1.00	1.67	#####	1.00	#####	1.00	1.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	2
CO3	3	2	1
CO4	2	2	2
CO5	2	1	1
Avg	2.4	1.8	1.6



IMS Engineering College, Ghaziabad

SEMESTER- IV													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS402/ KOE041-48	Maths IV/Engg. Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS401	Universal Human Values/Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3	KME401	Applied Thermodynamics	3	0	0	30	20	50		100		150	3
4	KME402	Engineering Mechanics	3	1	0	30	20	50		100		150	4
5	KME403	Manufacturing Processes	3	1	0	30	20	50		100		150	4
6	KME451	Applied Thermodynamics Lab	0	0	2				25		25	50	1
7	KME452	Manufacturing Processes Lab	0	0	2				25		25	50	1
8	KME453	Computer Aided Machine Drawing-II Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming / Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											
		Total										900	21



IMS Engineering College, Ghaziabad

Sub Code	KAS-402
Sub. Name	Maths-IV

COURSE OUTCOMES		Bloom's Level
CO1	The students will be able to learn the idea of partial differentiation and types of partial differential equations	
CO2	The students will be able to learn the idea of classification of second partial differential equations, wave, heat equation and transmission lines	
CO3	The students will be able to learn the basic ideas of statistics including measures of central tendency, correlation, regression and their properties.	
CO4	The students will be able to learn the ideas of probability and random variables and various discrete and continuous probability distributions and their properties.	
CO5	The students will be able to learn the statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.	

CO-PO Matrix												
Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO 7	PO8	PO9	PO1 0	PO1 1	PO1 2
CO1	3	2	1		1					1		
CO2	3	2	1									1
CO3	3	2	1	1						1	1	1
CO4	3	2	1	1	1						1	1
CO5	3	2	1	3	1		1			1	1	1
Avg	3.00	2.00	1.00	1.67	1.00		1.00			1.00	1.00	1.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3		1
CO4	3		1
CO5	3		1
Avg	3.00		1.00



IMS Engineering College, Ghaziabad

Sub Code	KVE-401
Sub. Name	UNIVERSAL HUMAN VALUES

COURSE OUTCOMES		Bloom's Level
CO1	To sensitize students about the role and importance of human values and ethics in Personal, social and professional life	
CO2	To encourage students to read and realize the values of enlightened human beings	
CO3	To enable students to understand and appreciate ethical concerns relevant to modern lives	
CO4	Students becoming responsible citizens and better professionals who practice Values and Ethics in every sphere of life.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3											3
CO2		3	2	2								
CO3		3					2					
CO4	2						2		2		2	2
Avg	2.5	3	2	2			2		2		2	

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	1
CO2	2	2	1
CO3	2	1	1
CO4	1	1	1
Avg	2	1.5	1



IMS Engineering College, Ghaziabad

Sub Code	KME-401
Sub. Name	APPLIED THERMODYNAMICS

COURSE OUTCOMES		Bloom's Level
CO1	Student must be able to explain the basic cycles involved in operation of petrol and diesel engines.	
CO2	Student must be able to test a actual running engine on the basis of various parameters.	
CO3	Student must be able to design and analyse a thermal power plant.	
CO4	Student must be able to apply the fundamentals of steam and gas nozzles in real world problems.	
CO5	Student must be able to understand the basics of gas turbine and jet propulsion.	

CO-PO Matrix												
Course Outcome	PO 1	PO2	PO3	PO 4	PO 5	PO 6	PO 7	PO8	PO 9	PO10	PO1 1	PO1 2
CO1	1						2	2	3	2	3	2
CO2	2	1	1			1	2		3		3	1
CO3	1	2				1	1	1	1	1	3	3
CO4	2	2	2		1		1	2	2		1	2
CO5				1		2	2	3	3	2	3	2
Avg	1.50	1.67	1.50	1.00	1.00	1.33	1.60	2.00	2.40	1.67	2.60	2.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	1	2
CO3	2	2	2
CO4	3	3	2
CO5	1	2	1
Avg	2.00	2.00	1.80



IMS Engineering College, Ghaziabad

Sub Code	KME-402
Sub. Name	Engineering Mechanics

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to evaluate the resultant force of any coplanar force system and friction forces.	
CO2	Students should be able to determine the internal forces in trusses and understand how to draw the variation of shear load and bending moment acting over entire length of different beams	
CO3	Students should be able to obtain centroid and second moment of area.	
CO4	Students should be able to describe the motion of a rigid body in terms of its position, velocity and acceleration and to analyze the forces causing the motion of a particle.	
CO5	Students should be able to apply work, energy, impulse and momentum relationships for a particle in motion.	
CO6	Students should be able to describe and find the strength of material in bending and torsion.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1							1
CO2	3	3	3	2	2							2
CO3	3	3	2	3	2							2
CO4	3	2	3	2	2							3
CO5	3	3	2	3	2							3
CO6	3	3	3	2	1							2
Avg	3.00	2.67	2.50	2.33	1.67							2.17

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	2	1	3
CO3	3	3	2
CO4	3	1	3
CO5	2	1	1
CO6			
Avg	2.4	1.8	1.6



IMS Engineering College, Ghaziabad

Sub Code	KME-403
Sub. Name	Manufacturing Processes

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to understand importance of the casting method, design considerations and their types, metal forming processes and their analysis & sheet metal operations like cup/deep drawing and bending.	
CO2	Students should be able to understand metal cutting operation.	
CO3	Students should be able to learn grinding and super finishing processes.	
CO4	Students should be able to Identify the use and applications of welding equipment.	
CO5	Students should be able to learn the basics of unconventional machining processes.	

CO-PO Matrix												
Course Outcome	PO 1	PO2	PO3	PO 4	PO 5	PO 6	PO 7	PO8	PO 9	PO10	PO1 1	PO1 2
CO1	3	3	2	2	2	1	1	2	1	1	1	1
CO2	3	3	3	2	2	1	1	1	1	1	1	2
CO3	2	2	2	2	2	1	1	1	1	1	1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	2
CO5	2	2	2	2	2	1	1	1	1	1	1	1
Avg	2.60	2.60	2.40	2.00	2.00	1.00	1.00	1.20	1.00	1.00	1.00	1.40

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	2	3	3
CO3	2	3	3
CO4	2	3	3
CO5	3	3	2
Avg	2.40	3.00	2.60



IMS Engineering College, Ghaziabad

Sub Code	KME 451
Sub. Name	Applied Thermodynamics Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to analyse and understand the working of different types of Boiler.	
CO2	Students should have ability to explain and analyse the two stroke and four stroke engine.	
CO3	Students should be ready to acquire the knowledge to measure the heat balance sheet.	
CO4	Students will be able to understand the steam engines.	
CO5	Students will be able to analyse the gas turbine.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1		2	2			2					
CO2	2	1		3			1					
CO3		2	3	2	3							
CO4		2		2	2				2		1	1
CO5	3		2	2	2	1	2					
Avg	2	1.67	2.33	2.20	2.33	1.00	1.67	#####	2.00	#####	1.00	1

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	3	3	1
CO4	3	2	3
CO5	2	1	1
Avg	2.4	2	1.8



IMS Engineering College, Ghaziabad

Sub Code	KME-452
Sub. Name	Manufacturing Process Lab

COURSE OUTCOMES		Bloom's Level
CO1	The students will understand the construction & working principle of Lathe machine and their application.	
CO2	The students will be able to analyse the working of milling machines & shaper machine.	
CO3	The students will learn to analyse grinding machine, surface grinding machine and drilling machine.	
CO4	The students can able to understand the design of different types of tool angles, tool materials, tool wear & tool life.	
CO5	The students will be able to know the design and drawing of Jigs & Fixture to hold the job on different machines.	
CO6	The students will be able to know the different types of welding processes and also the latest welding (joining) process like TIG & MIG.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2						1	2
CO2	2	2	2	2	2						1	2
CO3	2	3	2	2	2						1	2
CO4	3	3	3	3	2	1	1				1	2
CO5	2	2	2	2	2	1	1				1	2
CO6	3	3	2	2	2	1	1	1	1	1	1	2
Avg	2.33	2.50	2.17	2.17	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	2	2	3
CO3	2	2	3
CO4	2	2	3
CO5	3	2	2
CO6	3	3	3
Avg	2.50	2.33	2.83



IMS Engineering College, Ghaziabad

Sub Code	KME 453
Sub. Name	COMPUTER AIDED MACHINE DRAWING-II LAB

COURSE OUTCOMES		Bloom's Level
CO1	The students will understand the Conventional representation of machine components and materials.	
CO2	The students can able to understand Surface Roughness and nomenclature, machining symbols, indication of surface roughness.	
CO3	The students will learn Limits, Tolerance and Fits system of engineering design.	
CO4	The students will be able to understand and draw Part and Assembly Drawing of various machine parts.	
CO5	The students will understand Specification of Engineering materials, representation, Code designation.	
CO6	The students will be able to understand design and drawing of Production Drawing system.	
CO7	The students will be able to work on various Computer Aided Drafting software like AutoCAD, ProE etc.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	2	2					1		2
CO2	2	2	1	2	2					1		2
CO3	2	1	1	2	2					1		2
CO4	2	1	1	2	2					1		2
CO5	2	1	1	2	2					1		2
CO6	2	1	1	2	2					1		2
CO7	2	2	2	2	3					2		2
Avg	2	1.43	1.14	2	2.14					1.14		2



IMS Engineering College, Ghaziabad

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	2	2
CO3	2	2	1
CO4	2	1	1
CO5	1	2	1
CO6	2	1	1
CO7	1	2	2
Avg	2	1.86	1.57



IMS Engineering College, Ghaziabad

B. Tech Mechanical Engineering Evaluation Scheme

SEMESTER- V														
Sl. No.	Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credits	
			L	T	P	CT	TA	Total	PS	TE	PE			
1	KME 501	Heat and Mass Transfer	3	1	0	30	20	50		100		150	4	
2	KME 502	Strength of Material	3	1	0	30	20	50		100		150	4	
3	KME 503	Industrial Engineering	3	1	0	30	20	50		100		150	4	
4		Departmental Elective-I	3	0	0	30	20	50		100		150	3	
5		Departmental Elective-II	3	0	0	30	20	50		100		150	3	
6	KME 551	Heat Transfer LAB	0	0	2				25		25	50	1	
7	KME 552	Python Lab	0	0	2				25		25	50	1	
8	KME 553	Internet of Things Lab	0	0	2				25		25	50	1	
9	KME 554	Mini Project or Internship Assessment*	0	0	2				50			50	1	
10	KNC501/ KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC	
11	MOOCs (Essential for Hons. Degree)													
		Total	17	3	6							950	22	

*The Mini Project or internship (4 - 5 weeks) conducted during summer break after IV semester and will be assessed during V semester.



IMS Engineering College, Ghaziabad

Sub Code	KME-501
Sub. Name	Heat and Mass Transfer

COURSE OUTCOMES		Bloom's Level
CO1	Understand the fundamentals of heat and mass transfer.	K2
CO2	Apply the concept of steady and transient heat conduction.	K3
CO3	Apply the concept of thermal behavior of fins.	K3
CO4	Apply the concept of forced and free convection.	K3
CO5	Apply the concept of radiation for black and non-black bodies.	K3
CO6	Conduct thermal analysis of heat exchangers.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	1	1	1	1	2	1	1	1
CO2	2	2	3	2	1	2	1	1	1	1	1	1
CO3	2	3	2	3	1	1	1	1	1	1	1	2
CO4	2	2	3	2	1	1	1	1	2	1	1	2
CO5	2	3	2	2	1	1	1	1	1	1	1	1
CO6	2	2	2	2	1	1	1	1	1	1	1	1
Avg	2.16	2.33	2.5	2.16	1	1.16	1	1	1.33	1	1	1.33

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	2	3
CO2	3	2	2
CO3	2	2	2
CO4	3	2	2
CO5	2	2	3
CO6	2	2	2
Avg	2.33	2	2.33



IMS Engineering College, Ghaziabad

Sub Code	KME-502
Sub. Name	Strength of Material

COURSE OUTCOMES		Bloom's Level
CO1	Understand the concept of stress and strain under different conditions of loading	K2
CO2	Determine the principal stresses and strains in structural members	K3
CO3	Determine the stresses and strains in the members subjected to axial, bending and torsional loads	K3
CO4	Apply the concepts of stresses and strain in solving problems related to springs, column and pressure vessels	K3
CO5	Calculate the slope, deflection and buckling of loaded members	K3
CO6	Analyze the stresses developed in straight and curved beams of different cross sections	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2		1	1	1	1	1	1
CO2	3	2	2	2	2	1	1			1	1	1
CO3	3	3	2	2	2	1	1	1	1		1	1
CO4	3	3	3	2	2	1	1	1	1	1	1	1
CO5	3	3	2	2	2	1	1		1	1	1	1
CO6	3	3	3	2	2	1	1	1	1	1	1	1
Avg	3	2.83	2.33	2.00	2.00	0.83	1.00	0.66	0.83	0.83	1.00	1.00

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	2
CO3	3	3	2
CO4	3	3	2
CO5	3	3	2
CO6	3	3	2
Avg	3.00	3.00	2.00



IMS Engineering College, Ghaziabad

Sub Code	KME-503
Sub. Name	Industrial Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Understand the concept of production system, productivity, facility and process planning in various industries	K2
CO2	Apply the various forecasting and project management techniques	K3
CO3	Apply the concept of break-even analysis, inventory control and resource utilization using queuing theory	K3
CO4	Apply principles of work study and ergonomics for design of work systems	K3
CO5	Formulate mathematical models for optimal solution of industrial problems using linear programming approach	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1						2	2	3	2	3	2
CO2	2	1	1			2	2		3		2	1
CO3	2	2				1	2	1	1	2	3	1
CO4	2	2	2		1		1	2	2		1	2
CO5				1		2	2	3	3	2	3	2
Avg	1.75	1.67	1.50	1.00	1.00	1.67	1.80	2.00	2.40	2.00	2.40	1.60

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	1	2
CO3	2	2	2
CO4	3	3	2
CO5	1	2	1
Avg	2.00	2.00	1.80



IMS Engineering College, Ghaziabad

Sub Code	KME-051
Sub. Name	Computer Integrated Manufacturing

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basic concepts of automation, computer numeric control machining	K2
CO2	Understand the algorithms of line generation, circle generation, transformation, curve, surface modeling and solid modeling	K2
CO3	Understand group technology, computer aided process planning, flexible manufacturing, Industry 4.0, robotics	K2
CO4	Understand information system and material handling in CIM environment, rapid prototyping	K2
CO5	Apply the algorithms of line & circle generation and geometric transformations	K3
CO6	Develop CNC program for simple operations	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	3	1	2	1	2	2	2	2	2
CO2	2	3	2	3	1	2	1	2	2	2	2	2
CO3	2	3	2	3	1	2		2	2	2	2	2
CO4	2	2	2	3	1	2		2	2	2	2	2
CO5	2	1	2	3	1	2	1	2	2	2	2	2
CO6	2	1	2	3	1	2	1	2	2	2	2	2
Avg	2	2.16	2	3	1	2	1	2	2	2	2	2

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	3
CO3	3	3	2
CO4	3	3	2
CO5	3	3	3
CO6	3	3	2
Avg	3	3	2.33



IMS Engineering College, Ghaziabad

Sub Code	KME-054
Sub. Name	I C Engine, Fuel and Lubrication

COURSE OUTCOMES		Bloom's Level
CO1	Explain the working principle, performance parameters and testing of IC Engine.	K2
CO2	Understand the combustion phenomena in SI and CI engines and factors influencing combustion chamber design.	K2
CO3	Understand the essential systems of IC engine and latest trends and developments in IC Engines.	K2
CO4	Understand the effect of engine emissions on environment and human health and methods of reducing it.	K2
CO5	Apply the concepts of thermodynamics to air standard cycle in IC Engines	K3
CO6	Analyze the effect of various operating parameters on IC engine performance.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1		1		1	1
CO2	3	3	3	1	2	1	2		1		1	1
CO3	2	2	2	2	2	2	1	1	1	1	1	1
CO4	1	1	1	1	2	2	1	1	1	1	2	2
CO5	3	3	3	2	2	2	1	1	1	1	1	1
CO6	3	3	3	2	2	1	1	1	1	1	1	1
Avg	2.5	2.5	2.33	1.66	2	1.5	1.1	1	1	1	1.1	1.1

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	3	2	2
CO2	2	2	2
CO3	1	1	1
CO4	2	2	2
CO5	3	2	3
CO6	2	2	2
Avg	2.16	1.83	2



IMS Engineering College, Ghaziabad

Sub Code	KME-055
Sub. Name	Advanced Welding

COURSE OUTCOMES		Bloom's Level
CO1	Understand the physics of arc welding process and various operating characteristics of welding power source.	K2
CO2	Analyse various welding processes and their applications.	K3
CO3	Apply the knowledge of welding for repair & maintenance, along with the weldability of different materials.	K3
CO4	Apply the concept of quality control and testing of weldments in industrial environment.	K3
CO5	Evaluate heat flow in welding and physical metallurgy of weldments.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1							1
CO2	3	2	3	3	2							2
CO3	3	3	3	3	3							2
CO4	3	3	3	2	2							3
CO5	3	2	3	3	2							3
Avg	3.00	2.60	2.80	2.60	2.00							2.20

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	2	3
CO3	3	3	2
CO4	3	3	3
CO5	3	3	3
Avg	3.00	2.80	2.60



IMS Engineering College, Ghaziabad

Sub Code	KME-058
Sub. Name	Fuels and Combustion

COURSE OUTCOMES		Bloom's Level
CO1	Understand the properties of different types of fuel with their application.	K2
CO2	Classify different types of fuels.	K2
CO3	Understand the concept of combustion.	K2
CO4	Understand the fundamental concept of air pollution and its control.	K2
CO5	Calculate various properties of the fuels.	K3
CO6	Analyze the flue gases.	K4

CO-PO Matrix												
Course Outcome	PO 1	PO 2	PO 3	PO 4	PO5	PO6	PO7	PO 8	PO 9	PO10	PO1 1	PO1 2
CO1	2	2	2	1	1	1	1	1	3	1	1	2
CO2	3	3	3	2	1	3	1	1	1	1	1	3
CO3	3	2	3	2	1	2	2	1	2	1	1	2
CO4	2	3	2	3	1	1	1	1	1	1	1	1
CO5	2	2	3	2	1	2	3	1	2	1	1	2
CO6	2	2	2	2	1	1	1	1	1	1	1	2
Average	2.33	2.33	2.50	2.00	1.00	1.67	1.50	1.00	1.67	1.00	1.00	2.00

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	1	3
CO2	2	3	1
CO3	1	1	2
CO4	2	2	3
CO5	3	1	2
CO6	2	1	3
Average	2.00	1.50	2.33



IMS Engineering College, Ghaziabad

Sub Code	KME-551
Sub. Name	Heat Transfer Lab

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to measure the thermal conductivity of different common metallic materials.	
CO2	Student will be able to determine the thermal conductivity of insulating Asbestos powder inspherical shell.	
CO3	Student will be able to determine LMTD, effectiveness, heat transfer & overall heat transfercoefficient in a parallel or counter flow heat exchangers.	
CO4	Student will be able to visualise the pool boiling process and find out the heat transfer and heattransfer coefficient in a pool boiling apparatus	
CO5	Student will be able to determine the heat transfer coefficient through drop-wise and film-wisecondensation apparatus.	
CO6	Student will be able to study working principle of heat pipe.	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	1	2	1	1	2	1	1	1
CO2	1	2	1	1	1	1	1	1	1	1	1	2
CO3	2	2	1	1	1	1	2	1	1	1	1	2
CO4	2	2	2	3	1	2	1	1	1	1	1	1
CO5	2	2	3	2	1	1	1	1	2	1	1	1
CO6	3	2	2	2	1	1	1	1	1	1	1	2
Average	2.00	1.83	1.67	1.67	1.00	1.33	1.17	1.00	1.33	1.00	1.00	1.50

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	1	1	2
CO2	2	2	2
CO3	1	1	1
CO4	2	2	2
CO5	3	2	3
CO6	2	2	2
Average	1.83	1.67	2.00



IMS Engineering College, Ghaziabad

Sub Code	KME-552
Sub. Name	Python Lab

COURSE OUTCOMES		Bloom's Level
CO1	Apply conditional statement, loops condition and functions in python program	K3
CO2	Solve mathematical and mechanical problems using python program	K3
CO3	Plot various type of chart using python program	K3
CO4	Analyze the mechanical problem using python program	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2							
CO2	3	3	3	2	2							
CO3	2	2	2	2	2							
CO4	2	2	2	2	2							
Avg	2.25	2.25	2.25	2.00	2.00							

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
Avg	2.00	2.00	2.00



IMS Engineering College, Ghaziabad

Sub Code	KME-553
Sub. Name	Internet of Things Lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand Internet of Things and its hardware and software components	K2
CO2	Interface I/O devices, sensors & communication modules	K3
CO3	Remotely monitor data and control devices	K3
CO4	Design prototype of IoT based smart system	K4
CO5	Develop IoT based projects for real life problem	K6

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2							
CO2	3	2	2	3	2							
CO3	3	2	3	2	2							
CO4	2	2	2	2	2							
CO5	2	2	2	2	2							
Avg	2.5 0	2.00	2.2 5	2.2 5	2.0 0							

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	2	3	2
CO3	2	2	2
CO4	3	2	2
CO5	2	2	2
Avg	2.25	2.25	2.00



IMS Engineering College, Ghaziabad

Sub Code	KNC501
Sub. Name	Constitution of India, Law and Engineering

COURSE OUTCOMES		Bloom's Level
CO1	Identify and explore the basic features and modalities about Indian constitution.	
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and statelevel.	
CO3	Differentiate different aspects of Indian Legal System and its related bodies.	
CO4	Discover and apply different laws and regulations related to engineering practices.	
CO5	. Correlate role of engineers with different organizations and governance models	

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						2		2	1	1	2	2
CO2						2		1	1	1	2	2
CO3						2	1	1	1	1	1	2
CO4						3	2	2	1	2	1	2
CO5						3	2	2	1	2	1	2
Avg						2.4	1	1.6	1	1.4	1.4	2

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	1	1	1
CO2	1	1	1
CO3	1	1	1
CO4	1	2	1
CO5	1	2	1
Avg	1	1.4	1



IMS Engineering College, Ghaziabad

SEMESTER- VI													
Sl. No.	Code	Subject	Periods			Evaluation Scheme			End Semester			Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KME 601	Refrigeration and Air Conditioning	3	1	0	30	20	50		100		150	4
2	KME 602	Machine Design	3	1	0	30	20	50		100		150	4
3	KME 603	Theory of Machine	3	1	0	30	20	50		100		150	4
4		Departmental Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I	3	0	0	30	20	50		100		150	3
6	KME 651	Refrigeration and Air Conditioning Lab	0	0	2				25		25	50	1
7	KME 652	Machine Design Lab	0	0	2				25		25	50	1
8	KME 653	Theory of Machine Lab	0	0	2				25		25	50	1
9	KNC601/ KNC602	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC
10		Total	17	3	6							900	21



IMS Engineering College, Ghaziabad

Sub Code	KME-601
Sub. Name	Refrigeration & Air Conditioning

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basics concepts of Refrigeration & Air-Conditioning and its futureprospects.	K2
CO2	Explain the construction and working of various components in Refrigeration & Air-Conditioning systems.	K2
CO3	Understand the different types of RAC systems with their respective applications.	K2
CO4	Apply the basic laws to the thermodynamic analysis of different processes involved in Refrigeration and Air-Conditioning.	K3
CO5	Apply the basic concepts to calculate the COP and other performanceparameters for different RAC systems	K3
CO6	Analyze the effects of performance parameters on COP.	K4

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	1	1	2	1	1	1	1
CO2	3	3	3	2	2	2	1	1	1	1	1	2
CO3	3	3	2	2	2	1	1	1	1	1	1	1
CO4	3	2	2	1	2	2	1	1	1	1	1	2
CO5	3	2	2	2	2	1	1	1	1	1	1	1
CO6	3	2	2	2	1	1	1	1	1	1	1	1
Avg	3	2.5	2.33	2.00	2.00	1.33	1.00	1.00	1.00	1.00	1.00	1.30

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	3
CO2	3	3	3
CO3	2	2	3
CO4	2	3	3
CO5	1	3	2
CO6	1	2	2
Avg	2.00	2.66	2.66



IMS Engineering College, Ghaziabad

Sub Code	KME 602
Sub. Name	Machine Design

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to understand the basic concepts of Solid Mechanics	K2
CO2	Students would be able to classify various machine elements on the basis of their functions.	K2
CO3	Students should be able to apply the various principles of solid mechanics to machine elements subjected to static and fluctuating load.	K3
CO4	Students should be able to analyse force, twisting moment and failure causes in various machine elements.	K4
CO5	Students should be able to design the machine elements to meet the required specification	K5

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	1	1	2	1	2	1	1
CO2	3	2	3	3	2	1	2	1	1	1	1	2
CO3	3	3	3	2	3	2	3	1	1	1	1	1
CO4	3	3	3	1	2	1	1	1	1	1	1	2
CO5	2	3	3	2	2	3	3	1	1	1	1	1
Avg	2.8	2.8	3	2	2.2	1.6	2	1.2	1	1.2	1	1.4

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	2	2
CO3	3	3	3
CO4	3	2	3
CO5	3	3	3
Avg	3	2.4	2.8



IMS Engineering College, Ghaziabad

Sub Code	KME-603
Sub. Name	Theory of Machines

COURSE OUTCOMES		Bloom's Level
CO1	Understand the principles of kinematics and dynamics of machines.	K2
CO2	Calculate the velocity and acceleration for 4-bar and slider crank mechanism	K3
CO3	Develop cam profile for followers executing various types of motions	K3
CO4	Apply the concept of gear, gear train and flywheel for power transmission	K3
CO5	Apply dynamic force analysis for slider crank mechanism and balance rotating & reciprocating masses in machines.	K3
CO6	Apply the concepts of gyroscope, governors in fluctuation of load and brake & dynamometer in power transmission	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1								1
CO2	2	2	1	1	2		1					2
CO3	3	3	1	2	2	1	1					2
CO4	2	3	2	3	2	1	1					3
CO5	2	3	3	2	2	1	1					3
CO6	2	3	2	1	2	1	1					2
Avg	2.17	2.67	1.83	1.67	2.00	1.00	1.00					2.17

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	2		3
CO2	2	1	2
CO3	2		3
CO4	2	1	3
CO5	2		2
CO6	2	1	2
Avg	2	1	2.5



IMS Engineering College, Ghaziabad

Sub Code	KOE-069
Sub. Name	Understanding the Human Being Comprehensively – Human Aspirations and its Fulfillment

COURSE OUTCOMES	
CO1	The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
CO2	It is free from any dogma or set of do's and don'ts related to values.
CO3	It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated and encouraged to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.
CO4	This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student leading to continuous self-evolution.
CO5	This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs.

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					1	2	3	2	2	1		3
CO2			1		1		2	3	1			2
CO3		1			2	2	2	3	2	1		2
CO4	1				2		2	2	2	1	1	1
CO5			1	2		2	2	2	2	1		2
Avg	1	1	1	2	1.5	2	2.2	2.4	1.8	1	1	2

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	2		1	
CO2	1	1		
CO3	2	1		
CO4	1			
CO5	2	2		
CO6				
Avg	1.6	1.33	1	



IMS Engineering College, Ghaziabad

Sub Code	KME-061
Sub. Name	Nondestructive Testing

COURSE OUTCOMES		Bloom's Level
CO1	Understand the concept of destructive and Non-destructive testing methods.	K2
CO2	Explain the working principle and application of die penetrant test and magneticparticle inspection.	K2
CO3	Understand the working principle of eddy current inspection.	K2
CO4	Apply radiographic techniques for testing.	K3
CO5	Apply the principle of Ultrasonic testing and applications in medical and engineeringareas.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2		2	2		2		2	2	2		2
CO2	2		2	3		1		2	2	2		3
CO3	2		2	3		2		3	3	3		2
CO4	2		3	2		1		2	3	2		2
CO5	3		1	3		2		1	2	2		2
Avg	2.60		2.00	2.60		1.60		2.00	2.40	2.20		2.20

CO-PSO Matrix			
Cos	PSO1	PSO2	PSO3
CO1	2	2	2
CO2	3	2	3
CO3	2	3	3
CO4	2	2	2
CO5	3	2	2
Avg	2.40	2.20	2.40



IMS Engineering College, Ghaziabad

Sub Code	KME 651
Sub. Name	Refrigeration & Air Conditioning Lab

COURSE OUTCOMES		Bloom's Level
CO1	Determine the performance of different refrigeration and air-conditioningsystems.	K3
CO2	Apply the concept of psychrometry on different air cooling systems.	K3
CO3	Interpret the use of different components, control systems and tools used in RACsystems	K3
CO4	Demonstrate the working of practical applications of RAC systems.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	2	1	2	1	1	2	1	1
CO2	3	2	3	3	3	2	2	1	1	1	1	2
CO3	3	2	3	2	3	2	3	1	1	2	1	1
CO4	3	2	3	1	2	1	1	1	1	1	1	2
Avg	3	2	3	2	2.5	1.5	2	1	1	1.5	1	1.5

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	3	2
CO2	3	3	2
CO3	3	3	2
CO4	3	3	2
Avg	3	3	2



IMS Engineering College, Ghaziabad

Sub Code	KME 652
Sub. Name	Machine Design Lab

COURSE OUTCOMES		Bloom's Level
CO1	Students should be able to apply the various principles of solid mechanics to machine elements subjected to static and fluctuating load.	K3
CO2	Students would be able to write the computer programs and validate it.	K4
CO3	Students should be able to evaluate designed machine elements to check their safety.	K5
CO4	Students should be able to analyse force, twisting moment and failure causes in joints and couplings	K1
CO5	Students should be able to design the various machine elements like bearing, shaft etc.	K2

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	1	1	2	1	2	1	1
CO2	2	2	3	3	3	2	2	1	1	1	1	2
CO3	3	2	3	2	3	2	3	1	1	2	1	1
CO4	3	3	2	1	2	1	1	1	1	1	1	2
CO5	2	3	3	2	2	2	3	1	1	1	1	1
Avg	2.6	2.6	2.8	2	2.4	1.6	2	1.2	1	1.4	1	1.4

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	3	2
CO3	2	3	2
CO4	3	3	3
CO5	3	2	3
Avg	2.8	2.6	2.6



IMS Engineering College, Ghaziabad

Sub Code	KME-653
Sub. Name	Theory of Machines Lab

COURSE OUTCOMES		Bloom's Level
CO1	Demonstrate various mechanisms, their inversions and brake and clutches in automobiles	K2
CO2	Apply cam-follower mechanism to get desired motion of follower.	K3
CO3	Apply the concepts of gears and gear train to get desired velocity ratio for power transmission.	K3
CO4	Apply the concept of governors to control the fuel supply in engine.	K3
CO5	Determine the balancing load in static and dynamic balancing problem	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2		1					3
CO2	3	3	3	3	2	1	1					3
CO3	3	3	3	3	2	1	1					3
CO4	3	3	3	3	2	1	1					3
CO5	3	2	3	3	2	1	1					3
Avg												

CO-PSO Matrix			
COs	PSO1	PSO2	PSO3
CO1	2	1	3
CO2	2		3
CO3	3	1	3
CO4	3		2
CO5	2	1	3
Avg			



IMS Engineering College, Ghaziabad

Sub Code	KNC602
Sub. Name	INDIAN TRADITIONS, CULTURAL AND SOCIETY

COURSE OUTCOMES		Bloom's Knowledge Level
CO1	The course aims at imparting basic principles of thought process, reasoning and inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.	K3
CO2	To enable the students to understand the importance of our surroundings and encourage the students to contribute towards sustainable development.	K4
CO3	To sensitize students towards issues related to 'Indian' culture, tradition and its composite character.	K4
CO4	To make students aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.	K3
CO5	To acquaint students with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system.	K3

CO-PO Matrix												
Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				3		3		2				2
CO2						3	3	2				
CO3			2			3	3	1	3			
CO4			2			3	3	2	3			1
CO5			2			3	3	2	3			2
Avg			2.00	3.00		3.00	3.00	1.80	3.00			1.67

CO-PSO Matrix				
COs	PSO1	PSO2	PSO3	PSO4
CO1	1		2	
CO2	1			
CO3		1		
CO4	1		2	
CO5		1	2	
Avg	1.00	1.00	2.00	



IMS Engineering College, Ghaziabad

B. Tech Mechanical Engineering Evaluation Scheme Effective in Session 2021-22

SEMESTER- VII													
Sl. No.	Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1		HSMC-1/HSMC-2	3	0	0	30	20	50		100		150	3
2		Departmental Elective-IV	3	0	0	30	20	50		100		150	3
3		Departmental Elective-V	3	0	0	30	20	50		100		150	3
4		Open Elective-II	3	0	0	30	20	50		100		150	3
5	KME 751	Measurement & Metrology Lab	0	0	2				25		25	50	1
6	KME 752	Mini Project or Internship Assessment*	0	0	2				50			50	1
7	KME 753	Project	0	0	8				150			150	4
8		MOOCs (Essential for Hons. Degree)											
		Total	9	0	12	21						850	18

*The Mini Project or internship (5 - 6 weeks) conducted during summer break after VI semester and will be assessed during VII semester.

HUMANITIES, SOCIAL SCIENCE AND MANAGEMENT COURSE (HSMC COURSE) HSMC1/HSMC2

KHU701/ KHU801	RURAL DEVELOPMENT: ADMINISTRATION AND PLANNING
KHU702/ KHU802	PROJECT MANAGEMENT & ENTREPRENEURSHIP

OPEN ELECTIVE-II

KOE071	FILTER DESIGN
KOE072	BIOECONOMICS
KOE073	MACHINE LEARNING
KOE074	RENEWABLE ENERGY RESOURCES
KOE075	OPERATIONS RESEARCH
KOE076	VISION FOR HUMANE SOCIETY
KOE077	DESIGN THINKING
KOE078	SOIL AND WATER CONSERVATION ENGINEERING
KOE079	INTRODUCTION TO WOMEN'S AND GENDER STUDIES



IMS Engineering College, Ghaziabad

Sub Code	KCS 752
Sub. Name	Mini Project or Internship Assessment

COURSE OUTCOMES		Bloom's Level
CO1	Developing a technical artefact requiring new technical skills and effectively utilizing a new software tool to complete a task	K4,K5
CO2	Writing requirements documentation, Selecting appropriate technologies, identifying and creating appropriate test cases for systems.	K5,K6
CO3	Demonstrating understanding of professional customs & practices and working with professional standards.	K4,K5
CO4	Improving problem-solving, critical thinking skills and report writing.	K4,K5
CO5	Learning professional skills like exercising leadership, behaving professionally, behaving ethically, listening effectively, participating as a member of a team, developing appropriate workplace attitudes	K2, K4

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	3	3	3	3	3	2	1	2	2	2	2	3
CO2	3	3	2	2	2	1	1	2	2	3	1	1
CO3	1	1	1	1	1	3	2	3	2	2	2	2
CO4	3	3	3	3	3	2	1	1	2	3	1	3
CO5	1	1	1	1	1	2	2	3	3	3	3	1
Avg	2.2	2.2	2	2	2	2	1.4	2.2	2.2	2.6	1.8	2

COs	PSO1	PSO2
CO1	3	3
CO2	2	3
CO3	2	1
CO4	1	1
CO5	1	1
Avg	1.8	1.8



IMS Engineering College, Ghaziabad

Sub Code	KME076
Sub. Name	POWER PLANT ENGINEERING

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to learn about basics of power plant engineering	K2
CO2	Student will be able to know about power plant economics	K2
CO3	Student will be able to know about general layout, operation and maintenance of thermal power plant of thermal power plant	K2
CO4	Student will be able to learn about performance of diesel power plant, gas turbine plant and its fuels	K2
CO5	Student will be able to learn about nuclear reactors and hydro power plant	K3
CO6	Student will be able to learn about electrical system in power plant	K3

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1							1
CO2	3	3	3	3	2							2
CO3	3	2	2	3	2							3
CO4	3	2	3	2	3							3
CO5	3	2	2	3	2							2
CO6	3	3	3	2	1							2
Avg	3.00	2.33	2.50	2.50	1.83							2.17

COs	PSO1	PSO2	PSO3
CO1	3	2	3
CO2	3	2	2
CO3	3	3	3
CO4	3	2	3
CO5	2	1	2
CO6	3	2	3
Avg	2.83	2.00	2.67



IMS Engineering College, Ghaziabad

Sub Code	KME751
Sub. Name	Measurement and Metrology lab

COURSE OUTCOMES		Bloom's Level
CO1	Understand the basic principles of instrumentation for measurement of surface finish, strain, temperature, pressure and flow.	K2
CO2	Understand the principle and operation of Coordinate Measuring Machine (CMM).	K2
CO3	Apply Sine Bar, Slip Gauges, Bevel Protractor, Stroboscope, Dial Indicator etc. for measurement of different attributes.	K3
CO4	Apply the basic concepts of limits, fits & tolerances for selective assembly.	K3

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	3	3	3	2	2	1	1	2	1	2	1	1
CO2	3	2	3	3	2	1	2	1	1	1	1	2
CO3	3	3	3	2	3	2	3	1	1	1	1	1
CO4	1	3	3	3	3	1	1	3	1	1	1	1
Avg	2.5	2.75	3	2.5	2.5	1.25	1.75	1.75	1	1.25	1	1.25

COs	PSO1	PSO2
CO1	3	2
CO2	3	2
CO3	3	3
CO4	3	2
Avg	2.45	2.25



IMS Engineering College, Ghaziabad

Sub Code	KME075
Sub. Name	OPERATION RESEARCH

COURSE OUTCOMES		Bloom's Level
CO1	Student will be able to formulate linear programming problem.	K2
CO2	Student will be able to find optimal solution of an LPP.	K2
CO3	Student will be able to solve the problems of assignment model and Transportation model.	K2
CO4	Student will be able to understand the concept of decision making under under certainty, uncertainty and risk.	K2
CO5	Student will be able to apply johnson's algorithm to find the sequence of n-jobs on m-machines	K3
CO6	Student will be able to understand various models of inventory to solve the problems.	K3

CO-PO-PSO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1		1	1		1	1		2	3
CO2	2	2	1	1	1	1	1		1	1	2	2
CO3	2	2	1		1		2		2	1	3	3
CO4	1	2			1	2	2	2	3	1	2	3
CO5	3	1	1	1		1		1	2	1	1	2
CO6	3	1	1	1		1		1		1	1	2
Avg	2.00	1.67	1.00	1.00	1.00	1.20	1.67	1.25	1.80	1.00	1.83	2.50

COs	PSO1	PSO2	PSO3
CO1	3	1	1
CO2	3	1	1
CO3	2	1	1
CO4	2	1	1
CO5	3	2	1
CO6	2	1	1
Avg	2.50	1.17	1.00



IMS Engineering College, Ghaziabad

Sub Code	KME071
Sub. Name	Additive Manufacturing

Course Outcomes:

COURSE OUTCOMES		Bloom's Level
CO1	Understanding the basics of additive manufacturing/rapid prototyping and its advantages and disadvantages	K2
CO2	Understanding the role of additive manufacturing in the design process and implications for design.	K2
CO3	Understanding the process used in additive manufacturing for a range of materials and applications	K2
CO4	Understand the various software tools, process and techniques that enable advanced/additive manufacturing & personal fabrication	K2
CO5	Apply the knowledge of additive manufacturing for various real life applications.	K3

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	2	1	3	3								3
CO2	2	2	3	1	2	2				1	2	3
CO3	1	2	2	2			1	1	2		1	3
CO4	1	2	2	1	1	3	2	3	3		2	3
CO5	1	2	3	2		2			3		1	3
Avg	1.4	1.8	2	1.4	1.5	2.33	1.5	2	2.67	1	1.5	1.5

COs	PSO1	PSO2
CO1	1	1
CO2	1	
CO3	3	2
CO4	3	2
CO5		2
Avg	2	1.75



IMS Engineering College, Ghaziabad

Sub Code	KME071
Sub. Name	PROJECT MANAGEMENT & ENTREPRENEURSHIP

Course Outcomes:

COURSE OUTCOMES		Bloom's Level
CO1	To understand the concept and scope of Entrepreneurship	K1, K2
CO2	To understand the concept of Entrepreneurial Idea and Innovation	K1, K2
CO3	To understand the concept of project Management, Project Management Tools and different types of Project appraisal.	K2
CO4	To understand the concept of project cost estimation, Risk & uncertainty in project evaluation and preparation of detailed project report.	K2
CO5	To understand the concept of Social Entrepreneurship, Marketing Management, Risk Management and Legal Framework for Social Ventures.	K2

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	1	-	-	1	2	2	1	2	2	2	2	3
CO2	2	2	2	1	2	2	-	2	2	2	2	3
CO3	1	1	2	2	2	-	-	-	3	3	3	3
CO4	1	2	2	2	-	-	-	2	2	2	3	3
CO5	1	1	2	1	2	1	2	2	2	2	2	3
Avg	1.2	1.5	2	1.4	2	1.66	1.5	2	2.2	2.2	2.4	3

COs	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	1	1
CO5	1	1
Avg	1	1



IMS Engineering College, Ghaziabad

Sub Code	KME 753
Sub. Name	Project I

COURSE OUTCOMES		Bloom's Level
CO1	Demonstrate a sound technical knowledge of their selected project topic.	K2
CO2	Undertake problem identification, formulation and solution.	K3
CO3	Design engineering solutions to complex problems utilising a systems approach.	K3
CO4	Conduct an engineering project.	K3

CO-PO-PSO Mapping:

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

COs	PSO1	PSO2
CO1	3	3
CO2	3	2
CO3	3	3
CO4	3	3
Avg	3	3



IMS Engineering College, Ghaziabad

SEMESTER- VIII													
Sl. No	Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1		HSMC-2/HSMC-1	3	0	0	30	20	50		100		150	3
2		Open Elective-III	3	0	0	30	20	50		100		150	3
3		Open Elective-IV	3	0	0	30	20	50		100		150	3
4	KME 851	Project	0	0	18				100		300	400	9
5		MOOCs (Essential for Hons. Degree)											
		Total	9	0	18	27						850	18

HUMANITIES, SOCIAL SCIENCE AND MANAGEMENT COURSE (HSMC COURSE) HSMC1/HSMC2

KHU701/ KHU801	RURAL DEVELOPMENT: ADMINISTRATION AND PLANNING
KHU702/ KHU802	PROJECT MANAGEMENT & ENTREPRENEURSHIP

OPEN ELECTIVE –III

KOE-080	FUNDAMENTALS OF DRONE TECHNOLOGY
KOE-081	CLOUD COMPUTING
KOE-082	BIO MEDICAL SIGNAL PROCESSING
KOE-083	ENTREPRENEURSHIP DEVELOPMENT
KOE-084	INTRODUCTION TO SMART GRID
KOE-085	QUALITY MANAGEMENT
KOE-086	INDUSTRIAL OPTIMIZATION TECHNIQUES
KOE-087	VIROLOGY
KOE-088	NATURAL LANGUAGE PROCESSING
KOE-089	**HUMAN VALUES IN MADHYASTH DARSHAN

OPEN ELECTIVE –IV

KOE-090	ELECTRIC VEHICLES
KOE-091	AUTOMATION AND ROBOTICS
KOE-092	COMPUTERIZED PROCESS CONTROL
KOE-093	DATA WAREHOUSING & DATA MINING
KOE-094	DIGITAL AND SOCIAL MEDIA MARKETING
KOE-095	MODELING OF FIELD-EFFECT NANO DEVICES
KOE-096	MODELLING AND SIMULATION OF DYNAMIC SYSTEMS
KOE-097	BIG DATA
KOE-098	**HUMAN VALUES IN BUDDHA AND JAIN DARSHAN
KOE-099	**HUMAN VALUES IN VEDIC DARSHANA



IMS Engineering College, Ghaziabad

Sub Code	KOE085
Sub. Name	Quality Management

COURSE OUTCOMES		Bloom's Level
CO1	Students will be able to understand the concept of quality and different manufacturing techniques.	K2
CO2	Students will be able to demonstrate understanding of quality issues of all organizations, including public and service sectors.	K2
CO3	Students will be able to set up the different techniques for controlling the variation of quality parameters.	K2
CO4	Students will be able to demonstrate different methodologies along with relevant techniques proposed for product and process quality improvement.	K2
CO5	Students will be able to understand the breadth and depth of the quality management philosophy.	K3
CO6	Students will understand that the field of the quality keeps advancing and the scope of application of its philosophy expanding beyond the traditional manufacturing arena.	K3

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			1		1	3	2	3	3	2	2	3
CO2	1	2	3		2	3	2	2	3	2	2	2
CO3	3	3	3	3	3	2	2	1	2	3	3	3
CO4	3	1	2		2	2	2	1	2	2	1	3
CO5	1	1	2	1	3	3	2	1	3	2	3	3
CO6	1	1	3	1		1	2	1	2	2	2	2
Avg	1.80	1.60	2.33	1.67	2.20	2.33	2.00	1.50	2.50	2.17	2.17	2.67

COs	PSO1	PSO2	PSO3
CO1	1	3	3
CO2	1	2	1
CO3	1	3	2
CO4	3	2	1
CO5	1	2	1
CO6	1	2	1
Avg	1.33	2.33	1.50



IMS Engineering College, Ghaziabad

Subject Code	KOE094
Subject Name	Digital and Social Media Marketing

COURSE OUTCOMES		Bloom's Level
CO1	Students will develop an understanding of digital and social media marketing practices.	K2
CO2	Students will develop understanding of the social media platforms	K2
CO3	Students will acquire the skill to acquire and engage consumers online.	K2
CO4	Students will develop understanding of building organizational competency by way of digital marketing practices and cost considerations	K3
CO5	Students will develop understanding of the latest digital practices for marketing and promotion	K3

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1					1			3	3	1	2	3			
CO2					3			3	2	1		3			
CO3									3	1	1	3			
CO4					2			1	3	1	3	3			1
CO5					2			2	3	1	2	3			
Avg					2.25			2.25	2.8	1	2	3			1

COs	PSO1	PSO2	PSO3
CO1			
CO2			
CO3			
CO4			1
CO5			
Avg			1



IMS Engineering College, Ghaziabad

Sub Code	KHU 801
Sub. Name	Rural Development: Administration and planning

COURSE OUTCOMES		Bloom's Level
CO1	Students can understand the definitions, concepts and components of Rural Development.	K2
CO2	Students will know the importance, structure, significance, resources of Indian rural economy.	K3
CO3	Students will have a clear idea about the area development programmes and its impact.	K3
CO4	Students will be able to acquire knowledge about rural entrepreneurship.	K3
CO5	Students will be able to understand about the using of different methods for human resource planning.	K2

CO-PO-PSO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	2	1	2	1	1	2	2	1	2	2	2	2
CO2	2	1	2	2	1	1	1	2	2	2	2	2
CO3	2	2	2	2	1	2	1	2	2	2	2	2
CO4	2	2	2	2	2	1	2	2	2	2	2	2
CO5	3	2	2	2	2	2	2	1	2	2	2	2
Avg	2.2	1.6	2	1.8		1.6	1.6	1.6	2	2	2	2

COs	PSO1	PSO2
CO1	2	3
CO2	2	3
CO3	2	3
CO4	2	3
CO5	2	3
Avg	2	3



IMS Engineering College, Ghaziabad

Sub Code	KME 851
Sub. Name	Project II

COURSE OUTCOMES		Bloom's Level
CO1	Demonstrate a sound technical knowledge of their selected project topic.	K2
CO2	Undertake problem identification, formulation and solution.	K3
CO3	Design engineering solutions to complex problems utilising a systems approach.	K3
CO4	Conduct an engineering project.	K3

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	3	3	2	2	1	1	1	1	1	1	1	1
CO2	3	2	3	3	2	1	1	1	1	1	1	2
CO3	3	3	3	3	3	1	1	1	1	1	1	2
CO4	3	3	3	2	2	1	1	1	1	1	1	3
Average	3	3	2	2	1	1	1	1	1	1	1	1

COs	PSO1	PSO2
CO1	3	3
CO2	3	2
CO3	3	3
CO4	3	3
Avg	3	3