Appendix A

MGM University
Aurangabad – 431003
Approved Program Structure

Name of the College / Institute: **School of Engineering and Technology** Faculty of **Engineering and Technology**
Name of the Program: **Electrical and Computer Engineering**
Approved by the Board of Studies on: **24-05-2023**
Program Approved vide Academic Council Meeting dt ---------- Item No. ----------
Program Type: UG/PG/Integrated Masters Program/Diploma/Certificate Duration: Twelve Semesters
Curriculum Code: ---------- (This code will change when you change the Curriculum)

Program Name: Electrical and Computer Engineering

(Semester: First)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)					Total	Minimum Passing (Marks)						Credit	Remarks
						Internal			External			Internal			External				
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR	Total		
22IUCC0101B	Mathematics - I	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
22IUCC0102B	Physics - I	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
22IUCC0103B	Chemistry - I	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
22IUCC0104H	English - I	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
22IUCC0105T	Fundametals of Computer System	Theory	2	-	-	20	-	-	-	-	20	8	-	-	-	-	8	Audit	
22IUCC0106T	Engineering Graphics	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
22IUCC0102L	Physics - I Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
22IUCC0103L	Chemistry - I Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
22IUCC0104L	English - I Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
22IUCC0105L	Fundametals of Computer System Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	Audit	
22IUCC0106L	Engineering Graphics Lab	Practical	-	-	4	-	-	100	-	-	100	-	-	40	-	-	40	2	
Total			**17**	**3**	**12**	**120**	**100**	**300**	**300**	**0**	**820**	**8**	**0**	**120**	**120**	**0**	**328**	**23**	

(Semester: Second)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)					Total	Minimum Passing (Marks)						Credit	Remarks
						Internal			External			Internal			External				
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR	Total		
22IUCC0201B	Mathematics - II	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
22IUCC0202B	Physics - II	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
22IUCC0203B	Chemistry - II	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
22IUCC0204H	Universal Human Values -II	Theory	2	-	-	-	-	-	50	-	50	-	-	-	20	-	20	2	
22IUCC0205T	Computer Workshop	Theory	2	-	-	20	-	-	-	-	20	8	-	-	-	-	8	Audit	
22IUCC0202L	Physics - II Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
22IUCC0203L	Chemistry - II Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
22IUCC0204L	Universal Human Values Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
22IUCC0205L	Computer Workshop Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	Audit	
22IUCC0206L	Workshop Practices Lab	Practical	-	-	4	-	-	100	-	-	100	-	-	40	-	-	40	2	
Total			**13**	**3**	**12**	**80**	**60**	**300**	**230**	**0**	**670**	**8**	**0**	**120**	**92**	**0**	**268**	**19**	

Signature of the Principal / Director _____
Date _____
Abbreviations:
L- Lecture, T-Tutorial, P-Practical, CA- Continuous Assessment, MSE- Mid Semester Examination, ESE- End Semester Examination, PR-Practical, TW-Term Work.

Appendix A

MGM University
Aurangabad – 431003
Approved Program Structure

Name of the College / Institute: **School of Engineering and Technology** Faculty of **Engineering and Technology**

Name of the Program: **Electrical and Computer Engineering**

Approved by the Board of Studies on: **24-05-2023**

Program Approved vide Academic Council Meeting dt ---------- Item No. ----------

Program Type: UG/PG/Integrated Masters Program/Diploma/Certificate Duration: Twelve Semesters

Curriculum Code: ---------- (This code will change when you change the Curriculum)

Program Name: Electrical and Computer Engineering

(Semester: Third)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
22IUCC0301B	Mathematics - III	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
22IUCC0302B	Physics III	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
23IUEL0303T	Computer Programming	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0304T	Basic Electrical & Electronics	Theory	4	-	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
23IUEL0305T	Electrical Circuits	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
ENV-C	Environmental Studies	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	Audit	
22IUCC0305H	Effective Communication and soft skills	Theory	2	-	-	10	10	-	30	-	50	-	-	-	12	-	20	Audit	
22IUCC0302L	Physics III Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0303L	Computer Programming Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0304L	Basic Electrical & Electronics Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0305L	Electrical Circuits Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
22IUCC0305L	Effective Communication and soft skills Lab	Practical	-	-	2	-	-	30	-	-	30	-	-	12	-	-	12	Audit	
Total			**21**	**2**	**10**	**130**	**130**	**170**	**390**	**60**	**880**	**0**	**0**	**68**	**156**	**24**	**352**	**22**	

(Semester: Fourth)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
22IUCC0401B	M-IV	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
23IUEL0402T	Web Development	Theory	2	-	-	20	20	-	60	-	100	-	-	-	24	-	40	2	
23IUEL0403T	Electrical & Electronics Measurement	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0404T	Electronic Devices and Circuit	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0405T	Data Structures Using C	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0406T	Electric Material & Wiring Practices	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0402L	Web Development Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0403L	Electrical & Electronics Measurement Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0404L	Electronic Devices and Circuit Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0405L	Data Structures Using C Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL0406L	Electric Material & Wiring Practices Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
Total			**17**	**1**	**10**	**120**	**120**	**170**	**360**	**80**	**850**	**0**	**0**	**68**	**144**	**32**	**340**	**23**	

Signature of the Principal / Director _____

Date _____

Abbreviations:

L- Lecture, T-Tutorial, P-Practical, CA- Continuous Assessment, MSE- Mid Semester Examination, ESE- End Semester Examination, PR-Practical, TW-Term Work.

Note: * and # to indicate any one elective subject to be selected by the students.

Please note the following:

Audit courses. (Gandhian Studies, Communication skills, Environment studies and open electives to be mentioned in the appropriate sem. Whether to be counted for SGPA calculation or not. Please ensure that the spellings of names are correct. Weightage of marks are correct as per credit structure and Names of courses are written in full.

Appendix A

MGM University
Aurangabad – 431003
Approved Program Structure

Name of the College / Institute: **School of Engineering and Technology** Faculty of **Engineering and Technology**

Name of the Program: **Electrical and Computer Engineering**

Approved by the Board of Studies on: **24-05-2023**

Program Approved vide Academic Council Meeting dt ---------- Item No. ----------

Program Type: UG/PG/Integrated Masters Program/Diploma/Certificate Duration: Twelve Semesters

Curriculum Code: ---------- (This code will change when you change the Curriculum)

Program Name: Electrical and Computer Engineering

(Semester: Fifth)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
22IUCC0505B	Complex Analysis & Numerical Techniques	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
23IUEL0501T	Digital Electronics	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0502T	DC Machine & transformer	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0503T	Object Oriented Programming using C++	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0504T	Network analysis	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
GS-01	Gandhian Studies	Theory	2	-	-	20	-	-	30	-	50	-	-	-	12	-	20	Audit	
23IUEL0501L	Digital Electronics Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL0502L	DC Machine & transformer Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0503L	Object Oriented Programming using C++Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0504L	Network analysis Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
Total			**17**	**1**	**8**	**120**	**100**	**160**	**330**	**40**	**750**	**0**	**0**	**64**	**132**	**16**	**300**	**20**	

(Semester: Sixth)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
23IUEL0601T	Microcontroller & its application	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0602T	AC Machine	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0603T	Data Base Management Systems	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
22IUCC0606B	Statistics and Probability Theory	Theory	3	1	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
23IUEL0601L	Microcontroller & its application Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0602L	AC Machine Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL0603L	Data Base Management Systems Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
20UCC011P	Engineering Exploration	Practical	-	-	4	-	-	60	-	40	100	-	-	24	-	16	40	2	
23IUEL0604L	Electrical CAD	Practical	-	-	4	-	-	100	-	-	100	-	-	40	-	-	40	2	
Total			**12**	**1**	**14**	**80**	**80**	**290**	**240**	**60**	**750**	**0**	**0**	**116**	**96**	**24**	**300**	**20**	

Signature of the Principal / Director _____

Date _____

Abbreviations:

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Appendix A

MGM University
Aurangabad – 431003
Approved Program Structure

Name of the College / Institute: **School of Engineering and Technology** Faculty of **Engineering and Technology**

Name of the Program: **Electrical and Computer Engineering**

Approved by the Board of Studies on: **24-05-2023**

Program Approved vide Academic Council Meeting dt ---------- Item No. ----------

Program Type: UG/PG/Integrated Masters Program/Diploma/Certificate Duration: Twelve Semesters

Curriculum Code: ---------- (This code will change when you change the Curriculum)

Program Name: Electrical and Computer Engineering

(Semester: Seventh)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)					Total	Minimum Passing (Marks)					Total	Credit	Remarks
						Internal			External			Internal			External				
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
23IUEL0701T	Electric Power Generation	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0702T	Operating System	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0703T	Python Programming	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0704T	Computer Networking and Data Communication	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0705T	Electric Power Transmission & Distribution	Theory	4	1	-	20	20	-	60	-	100	-	-	-	24	-	40	5	
23IUEL0702L	Operating System Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0703L	Python Programming Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0704L	Computer Networking and Data Communication Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL0707P	Internship	Internship			2	-	-	60	-	40	100			24	-	16	40	1	
Total			**16**	**1**	**8**	**100**	**100**	**170**	**300**	**80**	**750**	**0**	**0**	**68**	**120**	**32**	**300**	**21**	

(Semester: Eight)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)					Total	Minimum Passing (Marks)					Total	Credit	Remarks
						Internal			External			Internal			External				
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
23IUEL0801T	Switchgear and protection	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
22IUEL0802T	Testing and Maintenance of Electric equipment	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0803T	Energy Conservation & Audit	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
22IUEL0804T	Software Engineering	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
OEL	Open Elective	Theory	2	-	-	20	-	-	30	-	50	-	-	-	12	-	20	2	
23IUEL0805T	Programming in Java	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0801L	Switchgear and protection Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL0802L	Testing and Maintenance of Electric equipment Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0803L	Energy Conservation & Audit Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
22IUEL0804L	Software Engineering Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL0805L	Programming in Java Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
Total			**17**	**0**	**10**	**120**	**100**	**190**	**330**	**60**	**800**	**0**	**0**	**76**	**132**	**24**	**320**	**22**	

Signature of the Principal / Director _____

Date _____

Abbreviations:

L- Lecture, T-Tutorial, P-Practical, CA- Continuous Assessment, MSE- Mid Semester Examination, ESE- End Semester Examination, PR-Practical, TW-Term Work.

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Please ensure that the spellings of names are correct. Weightage of marks are correct as per credit structure and Names of courses are written in full.

Appendix A

MGM University
Aurangabad – 431003
Approved Program Structure

Name of the College / Institute: **School of Engineering and Technology** Faculty of **Engineering and Technology**

Name of the Program: **Electrical and Computer Engineering**

Approved by the Board of Studies on: **24-05-2023**

Program Approved vide Academic Council Meeting dt ---------- Item No. ----------

Program Type: UG/PG/Integrated Masters Program/Diploma/Certificate Duration: Twelve Semesters

Curriculum Code: ---------- (This code will change when you change the Curriculum)

Program Name: Electrical and Computer Engineering

(Semester: Ninth)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
23IUEL0901T	Control System Engineering	Theory	4	-	-	20	20	-	60	-	100	-	-	-	24	-	40	4	
23IUEL0902T	Power Electronics	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0903T	Design and Analysis of Algo	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
-	**Program Elective - I**	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	
23IUEL0904T	Group A: Electrical Power Quality	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
	Group B: Internet of Things - 1	Theory																	
23IUEL0905T	Power system operation & Control	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL0901L	Control System Engineering lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0902L	Power Electronics Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL0903L	Design and Analysis of Algo Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL0904L	Group A: Electrical Power Quality Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
	Group B: Internet of Things - 1 Lab	Practical																	
23IUEL0905L	Power system operation & Control lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
Total			**16**	**0**	**10**	**100**	**100**	**190**	**300**	**60**	**750**	**0**	**0**	**76**	**120**	**24**	**300**	**21**	

(Semester: Tenth)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
23IUEL1001T	Illumination & electrification of Building	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL1002T	Digital Signal Processing	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL1003T	Artificial Intelligence	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL1004T	Indusrial Automation	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
-	**Program Elective - II**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23IUEL1005T	Group A: Special Purpose Electrical Machines	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
	Group B: Internet of Things - 2	Theory																	
23IUEL1001L	Illumination & electrification of Building Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL1002L	Digital Signal Processing Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL1003L	Artificial Intelligence Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL1004L	Indusrial Automation Lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL1005L	Group A: Special Purpose Electrical Machines Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
	Group B: Internet of Things - 2 Lab	Practical																	
23IUEL1006P	Project - I	Project	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	2	
Total			**15**	**0**	**12**	**100**	**100**	**220**	**300**	**80**	**800**	**0**	**0**	**88**	**120**	**32**	**320**	**22**	

Signature of the Principal / Director _____

Date _____

Abbreviations:

L- Lecture, T-Tutorial, P-Practical, CA- Continuous Assessment, MSE- Mid Semester Examination, ESE- End Semester Examination, PR-Practical, TW-Term Work.

Note: * and # to indicate any one elective subject to be selected by the students.

Please note the following:

Audit courses. (Gandhian Studies, Communication skills, Environment studies and open electives to be mentioned in the appropriate sem. Whether to be counted for SGPA calculation or not.

Please ensure that the spellings of names are correct. Weightage of marks are correct as per credit structure and Names of courses are written in full.

Appendix A

MGM University
Aurangabad – 431003
Approved Program Structure

Name of the College / Institute: **School of Engineering and Technology** Faculty of **Engineering and Technology**

Name of the Program: **Electrical and Computer Engineering**

Approved by the Board of Studies on: **24-05-2023**

Program Approved vide Academic Council Meeting dt ---------- Item No. ----------

Program Type: UG/PG/Integrated Masters Program/Diploma/Certificate Duration: Twelve Semesters

Curriculum Code: ---------- (This code will change when you change the Curriculum)

Program Name: Electrical and Computer Engineering

(Semester:Eleventh)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
23IUEL1101T	Data Science with Python	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL1102T	Machine Learning	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL1103T	Electric Drives	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL1104T	Electric Vehicle	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
-	**Program Elective - I**	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23IUEL1105T	Group A: Smart Grid Group B: Block Chain	Theory	3	-	-	20	20	-	60	-	100	-	-	-	24	-	40	3	
23IUEL1101L	Data Science with Python Lab	Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL1102L	Machine Learning lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL1103L	Electric Drives lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL1104L	Electric Vehicle lab	Practical	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	1	
23IUEL1105L	EnergySmart Grid Lab Block Chain Lab	Practical Practical	-	-	2	-	-	50	-	-	50	-	-	20	-	-	20	1	
23IUEL1106P	Project - II	Project	-	-	2	-	-	30	-	20	50	-	-	12	-	8	20	2	
Total			**15**	**0**	**12**	**100**	**100**	**220**	**300**	**80**	**800**	**0**	**0**	**88**	**120**	**32**	**320**	**22**	

(Semester: Tweleve)

Course code	Course Title	Type	Teaching Scheme			Evaluation Scheme (Marks)						Minimum Passing (Marks)						Credit	Remarks
						Internal			External		Total	Internal			External		Total		
			L	T	P	CA	MSE	TW	ESE	PR		CA	MSE	TW	ESE	PR			
23IUEL1201I	Internship	Internship	-	-	24	-	-	100	-	200	300	-	-	40	-	80	120	12	
Total			**0**	**0**	**24**	**0**	**0**	**100**	**0**	**200**	**300**	**0**	**0**	**40**	**0**	**80**	**120**	**12**	

Signature of the Principal / Director _____

Date _____

Abbreviations:

L- Lecture, T-Tutorial, P-Practical, CA- Continuous Assessment, MSE- Mid Semester Examination, ESE- End Semester Examination, PR-Practical, TW-Term Work.

Note: * and # to indicate any one elective subject to be selected by the students.

Please note the following:

Audit courses. (Gandhian Studies, Communication skills, Environment studies and open electives to be mentioned in the appropriate sem. Whether to be counted for SGPA calculation or not. Please ensure that the spellings of names are correct. Weightage of marks are correct as per credit structure and Names of courses are written in full.

School of Engineering &Technology,
MGM Campus, N-6, CIDCO,
Aurangabad (MS), India

Department of Applied Science
Curriculum of B.Tech. First Year
(Common to All Branches)
Academic Year 2022-23

MGM UNIVERSITY

School of Engineering and Technology

Teaching and Examination Scheme for Post S.S.C. Integrated B.Tech Engineering Courses

Program:- Common to All Program **Program Code:-ECE**

Duration of Program:- Twelve Semesters **Semester:- First**

Sr. No.	Course Title	Course Abbr.	Course Code	Teaching Scheme				Credits	Examination Scheme																Grand Total
									Theory										Practical								
									Exam Duration in Hrs.	CA		MSE		ESE		Total		CA		MSE		ESE		Total		
				L	T	P	(L+T+P)			Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	
1	Mathematics - I	MAT - I	22IUEC0101T	3	1	-	4	4	3	20*	8	20	8	60	24	100	40	-	-	-	-	-	-	-	-	100
2	Physics - I	PHY - I	22IUEC0102T	3	-	-	3	3	3	20*	8	20	8	60	24	100	40	-	-	-	-	-	-	-	-	100
3	Chemistry - I	CHY - I	22IUEC0103T	3	-	-	3	3	3	20*	8	20	8	60	24	100	40	-	-	-	-	-	-	-	-	100
4	English - I	ENG - I	22IUEC0104T	3	-	-	3	3	3	20*	8	20	8	60	24	100	40	-	-	-	-	-	-	-	-	100
5	Fundamentals of Computer System	FCS	22IUEC0105T	1	-	-	1	1	-	20*	8	-	-	-	-	20	8	-	-	-	-	-	-	-	-	20
6	Physics - I Lab	PHY - I	22IUEC0102L	-	-	2	2	1	-	-	-	-	-	-	-	-	-	30^	12	-	-	20#	8	50	20	50
7	Chemistry – I Lab	CHY - I	22IUEC0103L	-	-	2	2	1	-	-	-	-	-	-	-	-	-	30^	12	-	-	20#	8	50	20	50
8	English – I Lab	ENG - I	22IUEC0104L	-	-	2	2	1	-	-	-	-	-	-	-	-	-	30^	12	-	-	20@	8	50	20	50
9	Fundamentals of Computer System Lab	FCS	22IUEC0105L	-	-	2	2	1	-	-	-	-	-	-	-	-	-	30^	12	-	-	50@	20	80	32	80
10	Engineering Drawing Lab	EDG	22IUEC0106L	-	-	4	4	2	-	-	-	-	-	-	-	-	-	60^	24	-	-	40#	16	100	40	100
TOTAL				**13**	**1**	**12**	**26**	**20**	**-**	**100**	**-**	**80**	**-**	**240**	**-**	**420**	**-**	**180**	**-**	**-**	**-**	**150**	**-**	**330**	**-**	**750**

Student Contact Hours Per Week: - 26 Hrs. **Theory and Practical Periods of 60 minutes each.** **Medium of Instructions :- English** **Total Marks :- 750**

@ Internal Assessment, # External Assessment, $ No Theory Examination, @^ Computer Based Evaluation,*# on Line Examination

Abbreviations: ESE- End Semesters Exam, **MSE**- Mid Semester Exam, **CA** - Continuous Assessment, **L** - Lecture, **T** - Tutorial, **P**- Practical

(*): Under the theory CA, (i) Case Study or (ii) Micro-project or (iii) Model Making or (iv) Presentation or (v) Oral or (vi) Quizzes / Puzzles or (vii) Poster or (viii) Surprise Test to be taken during the semester for the assessment of the cognitive domain UOs required for the attainment of the COs.

(^): Under the practical CA, (i) File or Manual or Practical Book or Record Book completion to be taken during the semester for the assessment of the cognitive domain UOs required for the attainment of the COs.

Note: If Candidate not securing minimum marks for passing in the "CA" part of theory and practical of any course of any semester then the candidate shall be declared as "Detained" for the semester.

Course Code: 22IUEC0101T	Course Title: Basic Mathematics-M-1	Total Credits: 4
Teaching Scheme:		**Evaluation Scheme:**
Theory: 3 Hrs / week		**CA: 20 Marks**
Tutorial: 1 Hrs / week		**MSE: 20 Marks**
Practical: ---		**ESE: 60 Marks**
		Duration of Theory Paper: 2 Hrs.

Course Objectives	**1.** To gain knowledge and analytical perspective of basic concepts, principles, and expertise of underlying processes and skills, notably through motivation and visualization. **2.** To expose students with various areas of mathematics that is utilized in everyday life. **3.** To increase students interest in studying mathematics as a field. **4.** To apply the knowledge and skills acquired to solve problems and wherever possible. **5.** To understand the basic concept of probability to handling problems in data analysis.
Course Outcomes	**CO1:** Understand the basic concepts, principles, rules of algebra to solve the engineering problem in real world. **CO2**: Apply the basic concept of trigonometry to solve the engineering problem. **CO3:** Solve the engineering problem under the given geometrical condition. **CO4:** Utilize the basic concept of statistics to solve engineering problem. **CO5:** Understand the basic concept of probability to handling problems in data analysis.
Pre-requisites:	Matriculation Mathematics
Course Type:	**Basic Science course**

Course Contents

Unit No.	CO mapping	PO mapping	PSO mapping	Competency	PI	Teaching Methodology	Remark
Unit 1 Algebra 16Hrs.							

Logarithm: Concept and Definition of Logarithm**,** Rules of Logarithms. **Permutation and Combination :** Introduction, Fundamental Principle of counting, Permutations, Combinations. **Binomial Theorem:** Introduction, Binomial theorem for positive integral indices, General and middle terms. **Determinant and Matrices:** Definition and simple examples of determinant of order 2 & 3, Properties of Determinant, Minor and Cofactors, Crammer's Rule. **Matrices:** Concept and definition of matrices Types of matrices, Algebra of matrices, Transpose, orthogonal, Adjoint of matrices, Inverse of matrix, Equivalent matrices, Matrix inversion method. **Partial Fraction:** Introduction, Definition and types of fraction, Resolve into partial based on nature of factors and related problems.	CO1					Traditional lecture method/PPT presentation/ Tutorials/ Video.	

Unit 2: Trigonometry							**12Hrs.**
Trigonometric ratios of compound, allied, multiple and sub multiple angles, Factorization and De-Factorization formulae, Inverse trigonometric ratios and related problems, Principle values and relation between trigonometric and inverse trigonometric ratios.	CO2					Traditional lecture method/PPT presentation/ Tutorials/ Video.	
Unit 3: Co-ordinate Geometry							**12Hrs.**
Distance Formula, Section Formula, Different centers of triangle, Shifting of origin, Slope of line, Forms of Straight lines, Point of intersection of two lines, Angle between two lines and Condition of parallel and perpendicular lines, Perpendicular Distance of a point from the line, Perpendicular Distance between two parallel lines, Conic Section: Circle, Parabola, Ellipse, Hyperbola.	CO3					Traditional lecture method/PPT presentation/ Tutorials/ Video.	
Unit 4: Statistics							**12Hrs.**
Measure of central tendency: Mean (AM, GM, HM,) Mode, Median. **Measure of dispersion:** Range, MD, SD, and Test of consistency.	CO4					Traditional lecture method/PPT presentation/ Tutorials/ Video.	
Unit 5: Probability and Probability Distribution							**10Hrs.**
Definitions, Algebra of events, Types of events, Axiomatic approach to probability, Independent events, compound and conditional probability, Byes' Theorem. Binomial distribution, Poisson's distribution, Normal distribution.	CO5					Traditional lecture method/PPT presentation/ Tutorials/ Video.	

Text Books:

1. Higher Algebra Hall and Knight.
2. S.C. Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics, 11th edition, Sultan Chand & Sons, New Delhi.

Reference Books:

1. David Freedman, Robert Pisani and Roger Purves, Statistics, 4th Edition.
2. S.C. Gupta, Fundamental of Statistics, Himalaya.
3. H.C. Saxena, Mathematical Statistics, Sultan Chand & Sons, New Delhi.

Course Code: 22IUEC0102T	Course Title:	Total Credits: 2
Teaching Scheme:	**Physics-I**	EvaluationScheme:
Theory: 2 hours / week		CA:
Tutorial : --		MSE:
Practical : 2 hours / week		End Sem:
		DurationofTheoryPaper: 3 Hrs.

Course Objectives	**6.** To develop a way to understands natural phenomena **7.** To develop the foundation of all core engineering & technology **8.** To develop useful to develop skills, Accuracy with fundamental scientific concepts used in technical & industrial application.
Course Outcomes	**CO 1:** Identify different systems of units and convert units from one system to another as well as conversant with practical units. **CO 2:** Understand equations of motion and their applications. **CO 3:** Acquire basic knowledge on semiconductor &applicatation of P-N Junction diode. **CO 4**:Use the properties of photoelectric effect, optical fiber & nano particle for various engineering application
Pre-requisites:	10^{th} level Basic Science Concept.
CourseType:	Basic Science Course

CourseContents

Unit No.	CO mapping	PO mapping	PSO mapping	Competency	PI	Teaching Methodology	Remark
Unit1: UNITS & MEASUREMENTS						**Hrs.** [10 marks]	

1.1 Introduction of Unit, fundamental and derived quantities and their units, different system of Units (CGS, MKS, FPS and SI), 1.2 Definition of accuracy and error, Estimation of Errors, absolute error, relative error and percentage error.numerical problems. 1.3 Explanation of Dimension of physical quantity Dimensional Equations of physical quantities and their uses with examples.	**CO 1**					Lecture	

Unit2: KINEMATICS						**Hrs.** [15 marks]	
2.1 Introduction to scalar and vector Quantities, representation of vector, addition, subtraction and multiplication of vectors, parallelogram law of vector 2.2 Newton's Laws of motion: First law, Second law, &Third law, Statements & examples, Principle of conservation of linear momentum, statement and simple examples. 2.3Work, power and energy, its concept, units and dimension, Potential and Kinetic energy, its mathematical relations, Principle of conservation of energy, 2.4 Circular motion, and angular velocity, relation between angular velocity and linear velocity, Rotational motion, 2.5 Simple Harmonic Motion, derivation of its equations definition of amplitude, time period, frequency, phase etc., mathematical relations and units, Simple Pendulum .	**CO 2**					Lecture	
Unit3: HEAT AND THERMODYNAMICS						**Hrs.** [9 marks]	
3.1 Concept of heat and temperature, Unit of heat, Joule and calorie, thermometer, its interval and fixed point, different scales of temperatures and their conversion formulae, 3.2 Transmission of heat, three modes of heat transfer, conduction, convection and Radiation, good and bad conductor of heat, coefficient of thermal conductivity, its S.I. unit and dimension. 1st law and 2nd law of thermodynamics, Joule's	**CO 3**					Lecture	

law							
Unit4: MODERN PHYSICS						**Hrs.** [16 marks]	
4.1Photo electricity, Photon (quantum), Plank**'s** hypothesis, energy of photon**,** properties of photons. 4.2 Photo electric effect: Circuit diagram, process of photoelectric emission, definitions:-threshold frequency, threshold wavelength, stopping potential, characteristics of photoelectric effect 4.3 Refraction of light Refraction of monochromatic light, Snell's law, Derivation of prism formula, critical angle. total internal reflection, acceptance angle. 4.4 Optical fiber: principle, structure of optical fiber, propagation of light wave through optical fibre, derivation of numerical aperture and 4.5 Nano materials: Introduction and properties, synthesis of nano materials, Applications of Nano materials.	**CO 4**					Lecture	

ReferenceBooks:

Sl. No.	Title	Author	Publisher
1	Engineering Physics	R K Gour& S L Gupta	DhanpatRai Publication-New Delhi
2	Engineering Physics	M N Avadhanulu& P G Kshirsagar	S Chand & Company Ltd.- New Delhi
3	Fundamental of Physics	Jearl Walker	Wiley India Edition
4	Engineering Physics	V Rajendran	Tata McGraw-Hill Publishing Company Ltd-New Delhi

5	Applied Physics	Manpreet Singh, Dr. Major Singh, Mrs.Hitashi Gupta	S K Kataria& Sons- New Delhi

Course Code: 22IUEC0103T	**Course Title:** **Chemistry-1**	**Total Credits:**3
TeachingScheme:03		**Evaluation Scheme:**
Theory:3 HRS/WEEK		**CA:** 20
Tutorial:-		**MSE:** 20
Practical: 2HRS/WEEK		**EndSem:**60
		Duration of Theory Paper:3 Hrs.

Course Objectives	**1.** To apply knowledge from general **chemistry**, and material and energy balances to solve reactor design problems **2.** To provide a broad foundation in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective. **3.** To provide students with the skills required to succeed in graduate school, the chemical industry. **4.** To expose the students to a breadth of experimental techniques using modern instrumentation.
Course Outcomes	**CO1:** Relate Basic Concept of Structure of Atom **CO2**: Select the Relevant metallurgic Process related to Industrial Applications. **CO3:** Use Relevant Electrolyte in Electrolysis for different Applications **CO4:** Used Relevant engineering materials in Industry
Pre-requisites:	Pre university chemistry course
Course Type:	**Basic Science course**

Course Contents

Unit No.	**CO mapping**	**PO mapping**	**PSO mapping**	**Competency**	**PI**	**Teaching Methodology**	**Remark**
Unit1: Atomic Structure							**9Hrs.**

1.1• Definition of atom, Bohr's atomic model, structure of modern atom, characteristics of fundamental particles of an atom, definition of atomic number, atomic mass number and their differences, 1.2Isotopes and Isobars: Definitions, examples and distinction Isotopes. Definitions, examples and distinction Orbits and orbitals: s, p, d, f orbitals, shapes and description of s-orbital and p- orbital. Distribution of electrons in orbitals: Definition of electronic configuration, Aufbau's principle, Hund's rule, orbital electronic configurations (s, p, d, f) of elements having atomic number 1 to 30, Valence: Definitions of valenceelectrons, valence. Definition of electrovalence, positive and negative electrovalence, formation of Electrovalent compounds-MgO,CaCl2 Definition of covalence, single, double and triple covalent bonds, formation of Covalent compounds H2O,CO2,N2	CO1					Lecture	

Unit2: Metals and Alloys							**12Hrs.**
Metals and Alloys: **Metals:** **Occurrence of metals** infree and combined state, definitions-mineral, ore, Gangue, flux and slag, metallurgy. **Metallurgy**- Detailed Flow chart for extraction of metal, **Important extraction processes-**Concentration-gravity separation, Electromagnetic separation, froth floatation, calcinations androasting, Reduction smelting, alumina thermal process, Refining- poling, electro refining **Mechanical properties of metals**- Hardness, ductility, malleability, tensile strength, toughness, mach inability, weld-ability, forging, soldering, brazing, cast ability. **Alloys** Definition, purposes of making alloys with examples. Preparation methods- Fusion, Compression Classification of Alloys-Ferrous and nonferrous alloys with examples. **Examples of alloys-**Composition, properties and applications of duralumin, Woods metal,	CO2						
Unit3: Electrochemistry							**14Hrs.**

Basic concepts of electrolysis: Electrolyte, types of electrolyte-strong and weak electrolyte, their difference. Ionization and electrolytic dissociation, Arrhenius theory of electrolytic dissociation, degree of ionization, factors affecting degree of ionization. **Definitions** of electrolytic cell, electrodes-cathode, anode, electrode Potential-oxidation potential and reduction potential. **Electrolysis:** □ Mechanism of electrolysis-Electrolysis, electrochemical series for cations and anions, □ Mechanism of electrolysis of CuSO4 solution by using platinum electrodes and copper electrodes Applications of electrolysis-Electroplating of silver, electro refining of blister copper, Faraday's laws of electrolysis: Faraday's first and second law, relation between electrochemical equivalent and chemical equivalent, Numerical. **pH and pOH:** Definition of pH, pOH, pH Scale	CO3						
Unit4: Non-metallic Engineering Materials:							**10Hrs.**
Polymers (Plastics, Rubber) : **Plastics**: Definition of plastic, polymer, polymerization,types of Polymerization with examples. Types of plastic- thermo softening plastics and thermosetting plastics and their difference, properties and applications of plastics. **Rubber**: Types of rubber.	CO4						

Natural Rubber- definition, drawbacks of natural rubber, vulcanization ofrubber with chemical reaction, applications of vulcanized rubber . **Synthetic rubber**- definition, difference between natural and syntheticrubber, examples of synthetic rubber, properties of synthetic rubber like -elasticity, tack, and abrasion resistance, their definition and related applications. **4.3 Thermal Insulators** Thermal Insulators -Definition, characteristics of thermal insulators, classification- organic and inorganic thermal insulators, their examples, preparation, properties and applications of polystyrene and Distilled or pure water							

TextBooks:

1. Jain And Jain, Engineering Chemistry, DhanpatRai And Sons,New Delhi2015,ISBN:9352160002
2. Dara S.S. Engineering Chemistry, S,Chand publication New Delhi2013,ISBN:8121997658

ReferenceBooks:

1. Bagotsky V.S,Fundamental of Engineering Chemistry, Wiely International N.J.,2005 ISBN9780471700586
2. ABC of Chemistry Modern Publications

CourseCode: 22IUEC0104T	Course Title:English-1	TotalCredits:03
Teaching Scheme:		Evaluation Scheme:
Theory:3 Hrs/Week		CA: 20
Tutorial:-		MSE: 20
Practical: 2 Hrs/Week		EndSem:60
		Duration of Theory Paper: 3Hrs.

Course Objectives	**1.** To develop reading, writing and speaking skills in this course. **2.** Use English fluently and correctly in day-to-day communication. **3.**
Course Outcomes	**CO1:** Student will be able to apply basic concept of grammar in day to day communication **CO2**: Student will be able to Summaries and comprehend the given passages . **CO3:** Student will be able to Compose dialogue and paragraph for different situations. **CO4:** Student will be able to Use appropriate words as per the context **CO5:** Student will be able to Deliver prepared speeches to express ideas, emotionsand thoughts.
Pre-requisites:	Basic knowledge of English.
CourseType:	**Basic English.**

CourseContents

UnitNo.	CO mapping	PO mapping	PSO mapping	Competency	PI	Teaching Methodology	Remark
Unit1: Basic Grammar							**12Hrs.**
Articles, Preposition, Conjunction, Tenses, direct indirect speech, change the voice.	CO-1			1.1		Lecture	

Unit2: Comprehension							**12Hrs.**
Seen passages 1) Dare to Dream 2) Sindhutai Sapkal- The Mother of thousands of Orphans 3) Interview of Dr. APJ Abdul Kalam 4) Believe in Yourself	CO2			1.1			
Unit3:Paragraph and dialogue writing							**6Hrs.**
Paragraph Writing: Elaborate and expand the ideas with cohesion, coherence and use of correct punctuation marks Types of Paragraph: Narrative,Descriptive, Technical,Comparison and Contrast Dialogue Writing: Based on various situations	CO3			1.1			
Unit4:Vocabulary building							**5Hrs.**
Words Often Confused Collocation Prefix and Suffix Synonyms and Antonyms	CO4			1.1			
Unit5:Speeches							**5Hrs.**
Speech Writing based on situations: Welcome Speech, Farewell Speech, Vote of Thanks and Introducing a Guest	CO5			1.1			

TextBooks:

English Grammar And Composition Book (Wren & Martin)

Reference Books:

1. Oxford Modern English Grammar
2. Fundamentals of English Grammar (N.C. Sinha)

Course Code: 22IUEC0105T	Course Title: Fundamentals of Computer System	TotalCredits:02
Teaching Scheme:		Evaluation Scheme:
Theory:01		CA: 20
Tutorial:-		MSE: --
Practical: 02		End Sem: --
		Duration of Theory Paper: --Hrs.

Course Objectives	**1.** To understand basics of computer and working with OS. **2.** To develop working skills with productivity tools, power point presentation and Internet.
Course Outcomes	**CO1:** Use Computer System and its Peripherals**.** **CO2**: Prepare Business Document using word processing tool. **CO3:**Interpret data and represent it graphically using spreadsheet. **CO4:** Prepare Professional Presentations. **CO5:**Identify the layout of wired and wireless LAN Environment
Pre-requisites:	
Course Type:	

Course Contents

Unit No.	CO mapping	PO mapping	PSO mapping	Competency	PI	Teaching Methodology	Remark
Unit1:Introduction to Computer System							**02 Hrs.**
Basic of computer system: Overview of Hardware and Software , block diagram of Computer System, Input/output unit CPU, Arithmetic logic Unit (ALU),System of software Memory Unit.	**CO1**			1.1		Lecture	
Generation of O.S.: Overview of Different Types and Generation of Operating system	**CO1**			1.2		Lecture	

Working with OS: Create and manage file and folders, Copy a file, renaming and deleting of files and folders, Searching files and folders, application installation, creating shortcut of application on the desktop.	**CO1**			1.3		Lecture	
Printer and Scanner: Overview of printer and scanner, Features of printer and Scanner, Difference between Printer and Scanner.	**CO1**			1.4		Lecture	
Unit2:Word Processing							**4Hrs.**
Word processing: Overview of Word processor Basics of Font type, size, colour, Effects like Bold, italic, underline, Subscript, superscript, Case changing options Previewing a document, Saving a document, Closing a document and exiting application.	**CO2**			2.1		Lecture	
Editing a document: Format and align text, Formatting Paragraphs, Line and paragraph spacing, using FIND and REPLACE, Setting line spacing, add bullet and numbers in lists, add borders and shading, document views, Page settings and margins, Spelling and Grammatical checks	**CO2**			2.2		Lecture	

Inserting an image to word document: Insert and delete a page break, Insert page numbers, Insert the date and time, Insert special characters (symbols), Insert a picture from a file, Resize and reposition a picture	**CO2**			2.3		Lecture	
working with table: Insert a table, Convert a table to text, Navigate and select text in a table, Resize table cells, Align text in a table, Format a table, Insert and delete columns and rows, Borders and shading, Repeat table headings on subsequent pages, Merge and split cells.	**CO2**			2.4		Lecture	
Unit3:Spreadsheet							**4Hrs.**
working with spread sheet: Overview of workbook and worksheet, Create Worksheet Save, Copy Worksheet, Delete Worksheet, Close and open Workbook	**CO3**			3.1		Lecture	
Editing worksheet: Insert and select data, adjust row height and column width, delete, move data, insert rows and columns, Copy and Paste, Find and Replace, Spell Check Zoom In-Out, Special Symbols, Insert Comments, Add Text Box, Undo Changes, Freeze Panes, hiding/unhiding rows and columns.	**CO3**			3.2		Lecture	

formatting cells and sheet: Setting Cell Type, Setting Fonts, Text options, Rotate Cells, Setting Colors, Text Alignments, Merge and Wrap, apply Borders and Shades, Sheet Options, Adjust Margins, Page Orientation, Header and Footer, Insert Page Breaks, Set Background.	**CO3**			3.3		Lecture	
working with formula: Setting Cell Type, Setting Fonts, Text options, Rotate Cells, Setting Colors, Text Alignments, Merge and Wrap, apply Borders and Shades, Sheet Options, Adjust Margins, Page Orientation, Header and Footer, Insert Page Breaks, Set Background	**CO3**			3.4		Lecture	
Advanced operation: Conditional Formatting, Data Filtering, Data Sorting, Using Ranges, Data Validation, Adding Graphics, Printing Worksheets, print area, margins, header, footer and other page setup options	**CO3**			3.5		Lecture	
Working with chart: Introduction to charts, overview of different types of charts, Bar, Pie, Line charts, creating and editing charts. Using chart options: chart title, axis title, legend, data labels, Axes, grid lines, moving chart in a separate sheet.	**CO3**			3.6		Lecture	
Unit4:Presentation tool							**4Hrs.**

Creating presentation: Outline of an effective presentation, Starting a Presentation Files, Creating a Basic Presentation, Working with textboxes, Apply Character Formats, Format Paragraphs View a Presentation, Saving work, creating new Slides, Applying a theme, Changing Colors, fonts and effects, apply custom Color and font theme, changing the background, Arrange Slide sequence.	**CO4**			4.1		Lecture	
Working with table: Insert a Table in a Slide, Format Tables, and Import Tables from Other Office Applications.	**CO4**			4.2		Lecture	
Animation: Adding and Modifying animation to a Presentation - Insert Images into a Presentation, insert audio clips, video/animation, Add Shapes, Add Visual Styles to Text in a Presentation, Edit Graphical Objects on a Slide, Format Graphical Objects on a Slide, Group Graphical Objects on a Slide, Apply an Animation Effect to a Graphical Object, Add Transitions, Add Speaker Notes, Print a Presentation.	**CO4**			4.3		Lecture	
Working with Charts: Insert Charts in a Slide, Modify a Chart, Import Charts from Other Office Applications.	**CO4**			4.4		Lecture	
Unit5: Basic of Networking							**2Hrs.**

Introduction of networking Devices: Application of Network interface card (NIC), HUB, Switches,Routers, Modem	**CO5**			5.1		Lecture	
Concept of Network :- LAN,MAN,WAN Wireless network and devices; Wi-Fi, Access point,Repeaters,Bluetooth	**CO5**			5.2		Lecture	
Characteristics of Cable: CAT5,CAT6,fibre optic cable, use of crossover and straight cable,RJ-45 connectors, SC.ST,FC,LC type fiber Connectors	**CO5**			5.3		Lecture	
Types of Servers :- types, server features, description and its applications.	**CO5**			5.4		Lecture	

TextBooks:

1. B Ram –Computer Fundamental architecture and Organization, New age international Publications
2. Dr Rajendra Kawale ,"Computer Fundamental", Devraj Publications Dist. Solapur

ReferenceBooks:

1. Goel Anita, "Computer Fundamental", Pearson Education New Delhi

Alvaro, Feliex "Linux: Easy linux for beginners", Create space independent Publishing Platform-2016, ISBN

CourseCode: 22IUEC0102L	**Course Title:** Physics-1	**TotalCredits:**1
TeachingScheme:02		**EvaluationScheme:**
Theory:3 HRS/WEEK		**CA:** 30
Tutorial:-		**MSE:** --
Practical: 2HRS/WEEK		**EndSem:**20
		DurationofTheoryPaper:

CourseObjectives	**9.** To develop a way to understands natural phenomena **10.** To develop the foundation of all core engineering & technology **11.** To develop useful to develop skills, Accuracy with fundamental scientific concepts used in technical & industrial application.
CourseOutcomes	**CO1:** Identify different systems of units and convert units from one system to another as well as conversant with practical units. **CO2**: Understand equations of motion and their applications. **CO3:** Acquire basic knowledge on semiconductor &applicatation of P-N Junction diode. **CO4:** Use the properties of photoelectric effect, optical fiber & nano particle for various engineering application
Pre-requisites:	Pre university Physics course
CourseType:	**Basic Science course**

CourseContents

	CO mapping	PO mapping	PSO mapping	Competency	PI	Teaching Methodology	Remark
Practical No.1							**2Hrs.**
1] Measure the dimensions of given objects using Vernier caliper.	CO1					Demonstration method	

Practical No.2							**2 Hrs.**
2] Measure the dimensions of given objects using micrometer screw gauge.	CO1					Demonstration method	
Practical No.3							**2 Hrs.**
3] Measure the dimensions of given objects using spherometer	CO1					Demonstration method	
Practical No.4							**2Hrs.**
4] To determine the valve of acceleration due to gravity [g] of a place with simple pendulum.	CO2					Demonstration method	
Practical No.5							**2Hrs.**
5] Determination of force constant using Helical Spring	CO2					Demonstration method	
Practical No.6							**2 Hrs.**
6] Use Searle's thermal conductivity apparatus to find coefficient of thermal conductivity of a given material	CO3					Demonstration method	
Practical No.7						**2 Hrs.**	
7] Use Joule's calorimeter to determine Joule's Mechanical/ electrical equivalent of heat	CO3					Demonstration method	
Practical No.8						**2 Hrs.**	
8] To study the I-V characteristics of photoelectric effect	CO 4					Demonstration method	
Practical No.9						**2 Hrs.**	

To determine the refractive index of the material of the glass slab by pin method.	CO4					Demonstration method	

TextBooks:

1 Engineering Physics, R K Gour & S L Gupta , DhanpatRai Publication- New Delhi

2 Engineering Physics M N Avadhanulu & P G Kshirsagar S Chand & Company Ltd.- New Delhi

ReferenceBooks:

1 Fundamental of Physics Earl Walker , Wiley India Edition

2 Engineering Physics V Rajendran Tata McGraw-Hill Publishing Company Ltd- New Delhi

3 Applied Physics Manpreet Singh, Dr. Major Singh, Mrs.Hitashi Gupta S K Kataria& Sons- Publication New Delhi

Course Code: 22IUEC0103L	**Course Title:**	**Total Credits:**1
Teaching Scheme:02		**Evaluation Scheme:**
Theory:3 HRS/WEEK	**Chemistry-1**	**CA:** 30
Tutorial:-		**MSE:** --
Practical: 2HRS/WEEK		**EndSem:**20
		Duration of Theory Paper:

Course Objectives	**5.** To apply knowledge from general **chemistry**, and material and energy balances to solve reactor design problems **6.** To provide a broad foundation in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective. **7.** To provide students with the skills required to succeed in graduate school, the chemical industry. **8.** To expose the students to a breadth of experimental techniques using modern instrumentation.
Course Outcomes	**CO1:** Relate Basic Concept of Structure of Atom **CO2**: Select the Relevant metallurgic Process related to Industrial Applications. **CO3:** Use Relevant Electrolyte in Electrolysis for different Applications **CO4:** Used Relevant engineering materials in Industry
Pre-requisites:	Pre university chemistry course
Course Type:	**Basic Science course**

Course Contents

	CO mapping	**PO mapping**	**PSO mapping**	**Competency**	**PI**	**Teaching Methodology**	**Remark**
Practical No.1							**2Hrs.**
. Know your chemistry laboratory and prepare sample solutions of different concentration	CO1					Demonstration method	

Practical No.2							**2Hrs.**
Identify anion in ionic solution (non-metallic ion)	CO1					Demonstration method	
Practical No.3 .							**2Hrs.**
Identify cation in ionic solution (metallic ion)	CO1					Demonstration method	
Practical No.4							**2Hrs.**
Determine the percentage of iron in the given sample using redox titration.	CO2					Demonstration method	
Practical No.5							**2Hrs.**
Determine the pH value of given solution using universal indicator	CO3					Demonstration method	
Practical No.6							**2Hrs.**
Determine the voltage generated from chemical reaction using Daniel cell.	CO3					Demonstration method	
Practical No.7							**2Hrs.**
Calculate the electrochemical equivalent of copper by electrolysis of copper sulphate solution using copper electrode	CO3					Demonstration method	
Practical No.8							**2Hrs.**

Determine the rate of corrosion on different temperature. for aluminum	CO3					Demonstration method	
Practical No.9							**2Hrs.**
Prepare phenol formaldehyde resin used in manufacturing of Bakelite plastic.	CO4					Demonstration method	

Text Books:

3. Jain And Jain, Engineering Chemistry, Dhanpat Rai And Sons,New Delhi2015,ISBN:9352160002
4. Dara S.S. Engineering Chemistry, S,Chand publication New Delhi2013,ISBN:8121997658

Reference Books:

2. Bagotsky V.S,Fundamental of Engineering Chemistry, Wiley International N.J.,2005 ISBN9780471700586

Course Code: 22IUEC0104L	**Course Title:** English-I	**TotalCredits:**1
Teaching Scheme:02		**Evaluation Scheme:**
Theory:3 HRS/WEEK		**CA:** 20
Tutorial:-		**MSE:** --
Practical: 2HRS/WEEK		**EndSem:**20
		Duration of Theory Paper:

Course Objectives	**1.** To develop reading, writing and speaking skills in this course. **2.** Use English fluently and correctly in day-to-day communication.
Course Outcomes	**CO1:** Student will be able to apply basic concept of grammar in day to day communication **CO2**: Student will be able to Summarize and comprehend the given passages . **CO3:** Student will be able to Compose dialogue and paragraph for different situations. **CO4:** Student will be able to Use appropriate words as per the context **CO5:** Student will be able to Deliver prepared speeches to express ideas, emotions and thoughts.
Pre-requisites:	Basic knowledge of English.
Course Type:	**Basic English.**

Course Contents

	CO mapping	**PO mapping**	**PSO mapping**	**Competency**	**PI**	**Teaching Methodology**	**Remark**
Practical No.1							**2Hrs.**
Make sentences using correct articles	CO1					Demonstration method	

Practical No.2							**2Hrs.**
Make sentences using correct Preposition	CO1					Demonstration method	
Practical No.3 .							**2Hrs.**
D **Make sentences using correct Conjunctions**	CO2					Demonstration method	
Practical No.4							**2Hrs.**
Make sentences using correct active and passive voice.	CO2					Demonstration method	
Practical No.5							**2Hrs.**
Make sentences using correct direct and in direct speech.	CO2					Demonstration method	
Practical No.6							**2Hrs.**
Make sentences using correct tenses.	CO2					Demonstration method	
Practical No.7							2Hrs.
Make oral presentations using correct grammar.	CO3					Demonstration method	
Practical No.8							2Hrs.
Write short paragraphs emphasizing on syntax and sentence structure.	CO3					Demonstration method	

Practical No.9							**2 Hrs.**
Write different types of dialogues for role plays.	CO4					Demonstration method	
Practical No.10							**2Hrs.**
Construct sentences using various collocations.	CO4					Demonstration method	
Practical No.11							**2Hrs.**
Write different types of speeches using new vocabulary.	CO5					Demonstration method	
Practical No.12							**2Hrs.**
Deliver extempore short speeches of 3to5 minutes.	CO5					Demonstration method	

Text Books:

English Grammar and Composition Book (Wren & Martin)

Reference Books:

1. Oxford Modern English Grammar
2. Fundamentals of English Grammar (N.C. Sinha)

Course Code: 22IUEC0105L	Course Title: Fundamentals of Computer System	Total Credits: 01
Teaching Scheme:		Evaluation Scheme:
Theory: 00		CA: 30
Tutorial: 00		MSE: --
Practical: 02		End Sem: 50
		Duration of Practical Exam : 02Hrs.

CourseObjectives	**1.** To understand basics of computer and working with OS. **2.** To develop working skills with productivity tools, power point presentation and Internet.
CourseOutcomes	**CO1:** Use Computer System and its Peripherals**.** **CO2**: Prepare Business Document using word processing tool. **CO3:**Interpret data and represent it graphically using spreadsheet. **CO4:** Prepare Professional Presentations. **CO5:** Identify the layout of wired and wireless LAN Environment.
Pre-requisites:	
Course Type:	

Course Contents

Unit No.	CO mapping	PO mapping	PSO mapping	Competency	PI	Teaching Methodology	Remark
Practical 1:							**2Hrs.**
Identify various Input/Output devices.connections and peripherals of computer system.	**CO1**			1.1 &1 .2		Practical	
Practical 2:							**2Hrs.**
Install and work with wifi printer and scanner setting.	**CO1**			1.3		Practical	
Practical 3:							**2Hrs.**
Create, edit and save documents : apply formatting features on the text, line, paragraph. Use bullets, numbering, page formatting.	**CO2**			2.1&2 .2		Practical	

Practical 4:							**2Hrs.**
Insert, edit images and shapes, sizing, cropping color,background,group/u group. Insert and apply various table formatting features on it.	**CO2**			2.3 & 2.4		Practical	
Practical 5:							**2Hrs.**
Create, open and editworksheet 1. Enter data and format it adjust row height and column width. 2. Insert and delete cells, rows and columns. 3. Apply wrap text, orientation feature on cell.	**CO3**			3.1,3.2 &3.3		Practical	
Practical 6:							**2Hrs.**
Insert formulas,"IF"conditions,f functions and named ranges in worksheet. Apply data sort, Filter anddata validation features.	**CO3**			3.4 &3.5		Practical	
Practical 7:							**2Hrs.**
Create charts to apply various chart options.	**CO3**			3.6		Practical	
Practical 8:							**2Hrs.**
Create slide presentation. 1. Apply design themes to given presentation. 2. Add new slides and insert pictures / images, shapes. 3. Add tables and charts in slides. 4. Run slides presentation in different modes. 5. Print slide presentations on handouts.	**CO4**			4.1 & 4.2		Practical	
Practical 9:							**2Hrs.**

Apply animation effects to text and slides Add audio and video files in presentation.	**CO4**			4.3 &4 .4		Practical	
Practical 10:							**2Hrs.**
Connect/Disconnect LAN cable, external hard disk modem. Connect desktop computers and laptops with LCD/DLP Projectors.	**CO5**			5.1 &5 .2		Practical	
Practical 11:							**2Hrs.**
Prepare and test crossover and straight cable, CAT5,CAT6 cable, using crimping Tools, splicer. Connect two switches/Hubs/switches/r Outers physically.	**CO5**			5.3		Practical	
Practical 12:							**2Hrs.**
Identify server by its type and verify its Specification	**CO5**			5.4		Practical	

TextBooks:

1. B Ram –Computer Fundamental architecture and Organization, New age international Publications
2. Dr Rajendra Kawale ,"Computer Fundamental", Devraj Publications Dist. Solapur

ReferenceBooks:

1. Goel Anita, "Computer Fundamental", Pearson Education New Delhi
2. Alvaro, Feliex "Linux: Easy linux for beginners", Create space independent Publishing Platform-2016, ISBN

Course Code: 22IUEC0106L	Course Title: Engineering Drawing	Total Credits: 02
Teaching Scheme:		Evaluation Scheme:
Theory:		CA: 50
Tutorial:		MSE:
Practical: 4Hrs/week		EndSem:50
		Duration of Theory Paper: NA

Course Objectives	**1.** Dimension and annotate two-dimensional engineering drawings **2.** Comprehend general projection theory, with emphasis on orthographic projection to represent three-dimensional objects in two-dimensional views **3.** The application of industry standards and best practices applied in engineering graphics **4.** Emphasize freehand sketching to aid in the visualization process and to efficiently communicate ideas graphically.. **5.** Introduce CAD software for the creation of 3D models and 2D engineering drawings
Course Outcomes	**CO1:** Student will able to draw geometrical figures with proper dimensioning technique **CO2**: Student will able to draw the views of given object by using principles of orthographic projection **CO3:** Student will able to draw isometric views of given component or from orthographic projection **CO4:** Student will able to draw Engineering curves **CO5:** Student will able to draw free hand sketches of given engineering Elements **CO6:** Student will able to create 2D computer drawings on CAD software
Pre-requisites:	None
Course Type:	Graphical Language

Course Contents

	CO mapping	PO mapping	PSO mapping	Competency	PI	Teaching Methodology	Remark
Practical No.1							**2Hrs.**
Draw different types of lines, dimensioning styles. Draw regular geometric construction	CO1						

Practical No.1 continued							**2Hrs.**
Draw one figure showing dimensioning techniques. Draw one problem on redraw the figure.	CO1						
Practical No.2 Sheet no 1							**2Hrs.**
Draw two problem on orthographic projection using first angle method of projection having plain and slanting surface	CO2						
Practical No.2 Sheet no 2							**2Hrs.**
Draw two problem on orthographic projection using first angle method of projection having cylindrical surface, rib	CO2						
Practical No.3 sheet no 3							**2Hrs.**
Draw two problems on Isometric view of simple object having plain and slanting surface using natural scale	CO3						
Practical No.3 sheet no 4							**2Hrs.**
Draw two problems on Isometric view of simple object having plain and slanting surface using natural scale	CO3						
Practical No.4 sheet no 5							**2Hrs.**
Draw two problem on Isometric projection of object having cylindrical surface by using isometric scale	CO3						
Practical No.4 sheet no 6							**2Hrs.**

Draw two problem on isometric projection of object having slot on slanting surface by using isometric scale	CO3						
Practical No.5 sheet no 7							**2Hrs.**
Draw Engineering curves generated from conics 1. Ellipse 2. Parabola 3. Hyperbola	CO4						
Practical No.5 sheet no 8							
Draw In volute of circle andpentagon. Draw cyclical curve	CO 4						
Practical No.6 sheet no 9							**2Hrs.**
Draw free hand sketches/conventional representation of machine elements such as thread profile, nuts, bolts, studs, set screws, washer, locking arrangement	CO5						
Practical No.6 sheet no 9							**2Hrs.**
Draw free hand sketches/conventional representation of machine elements such as thread profile, nuts, bolts, studs, set screws, washer, locking arrangement	CO5						
Practical No.7							

Draw basic 2D entities like: rectangle, polygon, circle, Arc, circular and rectangular array by using AutoCAD	CO6						
Practical No.8							**2Hrs.**
Draw basic branch specific components in 2D using AutoCAD	CO6						
Practical No.8							**2Hrs.**
Draw complex branch specific components in 2D using AutoCAD	CO6						

Text Books:

1.N. D. Bhatt and Panchal V. M., “Engineering Drawing”, Charotar Publishing House, Anand2 P. J. Shah , “ A Text Book of Engineering Drawing”, S.Chand, New Delhi
3. Shah M.B. &RanaB.C,”Engineering Drawing & Computer Graphics”, Pearson Publications,4.Agrawal B.&Agrawal C.M, “Engineering Graphics”, TMH Publications
5.Narayana K.L. & P. Kannaiah, “Engineering Drawing”, Scitech Publications
6.P.I Vargese, “Engineering Graphics”, McgrawHill Publications7.D.A.Hindoliya,” Engineering Graphics”, B.S.Publications

Reference Books :

1.Dabhade M. L., “Engineering Graphics”, Vol.-I and Vol.-II, Vision Publications, Pune 2.K.Venugopal, "Engineering Drawing and Graphics" ,New Age International Publishers