ANNA UNIVERSITY, CHENNAI AFFILIATED INSTITUTIONS B.E. MECHATRONICS ENGINEERING REGULATIONS – 2017 CHOICE BASED CREDIT SYSTEM

1. PROGRAMME EDUCATIONAL OBJECTIVES:

Bachelor of Mechatronics Engineering curriculum is designed to prepare the graduates having attitude and knowledge to

- 1. Develop innovative and sustainable products with multidisciplinary Engineering expertise.
- 2. Solve complex engineering problems by applying mechanical, electrical and computer knowledge and engage in lifelong learning in their profession
- 3. Work or pursue higher education in multicultural, multilingual and multinational environment with competent oral and written communication.
- 4. Lead and contribute in a team entrusted with professional, social and ethical responsibilities.

2. PROGRAMME OUTCOMES:

- a. Will be able to apply the laws of science and mathematics to provide engineering solutions to solve complex problems.
- b. Will be able to identify and analyze complex problems by modeling with the help of literature survey and validate the solution with experiments.
- c. Will be able to design and develop Mechatronics systems by selecting and integrating, sensors, appropriate materials, mechanics, thermal systems, manufacturing and automation methods
- d. Will be able to collect, condition monitor and interpret data to provide engineering solutions.
- e. Will be able to create applications, products as well as modernizing the existing systems by using latest tools and technologies.
- f. Will be able to develop solutions for local and global requirements by applying engineering knowledge and professional ethics.
- g. Will have professional values on environmental and energy consumption for sustainability.
- h. Will be able to become a leader and contribute in a team with entrepreneurial qualities.
- i. Will be able to interact effectively in both oral and written format.
- j. Will continuously update their knowledge and skills to meet the ever changing global needs.

3. PEO / PO Mapping

PEO / PO	а	b	С	d	e	f	g	h	i	j
1	✓	✓	✓	✓	✓	✓	✓			
2	✓	✓	✓	✓	✓	✓				✓
3									✓	✓
4							✓	✓	✓	

ANNA UNIVERSITY, CHENNAI AFFILIATED INSTITUTIONS B.E. MECHATRONICS ENGINEERING REGULATIONS – 2017 CHOICE BASED CREDIT SYSTEM I TO VIII SEMESTERS CURRICULA AND SYLLABI

SEMESTER I

SL. NO	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	Т	Р	С
THE	ORY							
1.	HS8151	Communicative English	HS	4	4	0	0	4
2.	MA8151	Engineering Mathematics - I	BS	4	4	0	0	4
3.	PH8151	Engineering Physics	BS	3	3	0	0	3
4.	CY8151	Engineering Chemistry	BS	3	3	0	0	3
5.	GE8151	Problem Solving and Python	ES	3	3	C	0	3
		Programming		J	J	U		-
6.	GE8152	Engineering Graphics	ES	6	2	0	4	4
PRA	CTICALS							
7.	GE8161	Problem Solving and Python	ES	4	0	C	4	2
		Programming Laboratory			J	J	+	
8.	BS8161	Physics and Chemistry Laboratory	BS	4	0	0	4	2
			TOTAL	31	19	0	12	25

SEMESTER II

SL. NO	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	Т	Р	С
THEC	DRY							
1.	HS8251	Technical English	HS	4	4	0	0	4
2.	MA8251	Engineering Mathematics - II	BS	4	4	0	0	4
3.	PH8251	Materials Science	BS	3	3	0	0	3
4.	BE8253	Basic Electrical, Electronics and Instrumentation Engineering	ES	3	3	0	0	3
5.	GE8291	Environmental Science and Engineering	HS	3	3	0	0	3
6.	GE8292	Engineering Mechanics	ES	5	3	2	0	4
PRA	CTICALS							
7.	GE8261	Engineering Practices Laboratory	ES	4	0	0	4	2
8.	BE8261	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	ES	4	0	0	4	2
			TOTAL	30	20	2	8	25

SEMESTER VIII, ELECTIVE V

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	Р	С
1.	CS8492	Database Management Systems	PE	3	3	0	0	3
2.	MG8892	Marketing Management	PE	3	3	0	0	3
3.	IM8071	Product Design and Development	PE	3	3	0	0	3
4.	GE8076	Professional Ethics in Engineering	PE	3	3	0	0	3

EMPLOYABILITY ENHANCEMENT COURSES (EEC)

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT	L	Т	Р	С
1.	HS8381	Interpersonal Skills/Listening & Speaking	EEC	2	0	0	2	1
2.	ME8682	Design and Fabrication Project	EEC	4	0	0	4	2
3.	HS8461	Reading and Writing Skills	EEC	2	0	0	2	1
4.	HS8581	Professional Communication	EEC	2	0	0	2	1
5.	MT8811	Project Work	EEC	20	0	0	20	10

SUMMARY

			B.E.	MECHA	ATRONI	CS EN	GINEE	RING			
	Subject Area			Cred	dits Per	Semes	ster			Credits	Percentage
	Semester		II	III	IV	V	VI	VII	VIII	Total	%
1.	Humanities and Social Studies (HS)	4	7				3			14	8
2.	Basic Sciences (BS)	12	7	4	4					27	15
3.	Engineering Sciences (ES)	9	11	17		8				45	24
4.	Professional Core (PC)			3	18	11	16	13	3	64	34
5.	Professional Electives (PE)						3	6	6	15	8
6.	Open Electives (OE)					3		3		6	3
7.	Project Work (PR/EEC)			1	1	1	2		10	15	8
	TOTAL	25	25	25	23	23	24	22	19	186	
8.	Non-Credit/ (Mandatory)	-									

HS8581

PROFESSIONAL COMMUNICATION

L T P C 0 0 2 1

PERIODS

OBJECTIVES: The course aims to:

- Enhance the Employability and Career Skills of students
- Orient the students towards grooming as a professional
- Make them Employable Graduates
- Develop their confidence and help them attend interviews successfully.

UNIT I

Introduction to Soft Skills-- Hard skills & soft skills - employability and career Skills—Grooming as a professional with values—Time Management—General awareness of Current Affairs

UNIT II

Self-Introduction-organizing the material - Introducing oneself to the audience – introducing the topic – answering questions – individual presentation practice— presenting the visuals effectively – 5 minute presentations

UNIT III

Introduction to Group Discussion— Participating in group discussions – understanding group dynamics - brainstorming the topic — questioning and clarifying –GD strategies- activities to improve GD skills

UNIT IV

Interview etiquette – dress code – body language – attending job interviews– telephone/skype interview - one to one interview &panel interview – FAQs related to job interviews

UNIT V

Recognizing differences between groups and teams- managing time-managing stress- networking professionally- respecting social protocols-understanding career management-developing a long-term career plan-making career changes

TOTAL:

30

OUTCOMES: At the end of the course Learners will be able to:

- Make effective presentations
- Participate confidently in Group Discussions.
- · Attend job interviews and be successful in them.
- Develop adequate Soft Skills required for the workplace

Recommended Software

- 1. Globearena
- 2. Win English

REFERENCES:

- 1. Butterfield, Jeff Soft Skills for Everyone. Cengage Learning: New Delhi, 2015
- 2. E. Suresh Kumar et al. Communication for Professional Success. Orient Blackswan: Hyderabad, 2015
- 3. Interact English Lab Manual for Undergraduate Students,. OrientBalckSwan: Hyderabad, 2016.
- 4. Raman, Meenakshi and Sangeeta Sharma. Professional Communication. Oxford University Press: Oxford, 2014
- 5. S. Hariharanetal. Soft Skills. MJP Publishers: Chennai, 2010.

Software:					
1	Delta PLC software – free ware and corresponding PLC programming software.	1			
2	Open source SCADA software such as Free SCADA, Open SCADA, Indigo SCADACodeSys Open source for PLC programming and interfacing with real time PLC.	1			

ME8682

DESIGN AND FABRICATION PROJECT

L T P C 0 0 4 2

OBJECTIVE:

 The main objective is to give an opportunity to the student to get hands on training in the fabrication of one or more components of a complete working model, which is designed by them.

GUIDELINE FOR REVIEW AND EVALUATION

The students may be grouped into 2 to 4 and work under a project supervisor. The device/ system/component(s) to be fabricated may be decided in consultation with the supervisor and if possible with an industry. A project report to be submitted by the group and the fabricated model, which will be reviewed and evaluated for internal assessment by a Committee constituted by the Head of the Department. At the end of the semester examination the project work is evaluated based on oral presentation and the project report jointly by external and internal examiners constituted by the Head of the Department.

OUTCOMES:

Upon the completion of this course the students will be able to

CO1 design and Fabricate the machine element or the mechanical product.

CO2 demonstrate the working model of the machine element or the mechanical product.

ME8691

COMPUTER AIDED DESIGN AND MANUFACTURING

L T P C 3 0 0 3

TOTAL: 60 PERIODS

OBJECTIVES:

- To provide an overview of how computers are being used in mechanical component design
- To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system.

UNIT I INTRODUCTION

9

Product cycle- Design process- sequential and concurrent engineering- Computer aided design — CAD system architecture- Computer graphics — co-ordinate systems- 2D and 3D transformations-homogeneous coordinates - Line drawing -Clipping- viewing transformation-Brief introduction to CAD and CAM — Manufacturing Planning, Manufacturing control- Introduction to CAD/CAM —CAD/CAM concepts —Types of production - Manufacturing models and Metrics — Mathematical models of Production Performance

10

Traction control system — Cruise control system — electronic control of automatic transmission — antilock braking system — electronic suspension system — working of airbag and role of MEMS in airbag systems — centralized door locking system — climate control of cars.

TOTAL: 45 PERIODS

OUTCOMES:

After successful completion of this course, the students should be able to

CO1: Know the importance of emission standards in automobiles.

CO2: Understand the electronic fuel injection/ignition components and their function.

CO3: Choose and use sensors and equipment for measuring mechanical quantities, temperature and appropriate actuators.

CO4: Diagnose electronic engine control systems problems with appropriate diagnostic tools.

CO5: Analyses the chassis and vehicle safety system.

TEXT BOOK:

1. Ribbens, "Understanding Automotive Electronics", 8th Edition, Elsevier, Indian Reprint, 2013

REFERENCES

- 1. Barry Hollembeak, "Automotive Electricity, Electronics & Computer Controls", Delmar Publishers, 2001
- 2. Richard K. Dupuy "Fuel System and Emission controls", Check Chart Publication, 2000.
- 3. Ronald. K. Jurgon, "Automotive Electronics Handbook", McGraw-Hill, 1999.
- 4. Tom Denton, "Automobile Electrical and Electronics Systems", Edward Arnold Publishers, 2000.

MT8811 PROJECT WORK L T P C 0 0 20 10

OBJECTIVES:

- To develop knowledge to formulate a real world problem and project's goals.
- To identify the various tasks of the project to determine standard procedures.
- To identify and learn new tools, algorithms and techniques.
- To understand the various procedures for validation of the product and analysis the cost effectiveness.
- To understand the guideline to Prepare report for oral demonstrations.

Students in the form of group, not exceeding 3 members in a group to carry out their main project. It should be a Mechatronics project. However, special considerations can be given for interdisciplinary measurement and computer based simulation projects. This exception should be recorded and approved by the department committee. Management related projects will not be allowed. The interdisciplinary projects will carry more weight age. It is mandatory to publish their main project in national/international level conferences to appear in the viva-voce exam.

OUTCOMES:

After successful completion of this course, the students should be able to

CO1: Design, analyze, realize / simulate a physical system by using the technology they learnt during the program.

CO2: Integrate various systems into one Mechatronics product.

CO3: Work in a team with confined time duration.

CO4: Disseminate his work both in oral and written format.

TOTAL: 300 PERIODS

2009.

- 3. William F. Clocksin and Christopher S. Mellish," Programming in Prolog: Using the ISO Standard", Fifth Edition, Springer, 2003.
- 4. Gerhard Weiss, "Multi Agent Systems", Second Edition, MIT Press, 2013.
- 5. David L. Poole and Alan K. Mackworth, "Artificial Intelligence: Foundations of Computational Agents", Cambridge University Press, 2010.

MG8091

ENTREPRENEURSHIP DEVELOPMENT

L T P C 3 0 0 3

OBJECTIVE:

• To develop and strengthen entrepreneurial quality and motivation in students and to impart basic entrepreneurial skills and understanding to run a business efficiently and effectively.

UNIT I ENTREPRENEURSHIP

9

Entrepreneur – Types of Entrepreneurs – Difference between Entrepreneur and Intrapreneur Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth.

UNIT II MOTIVATION

9

Major Motives Influencing an Entrepreneur – Achievement Motivation Training, Self Rating, Business Games, Thematic Apperception Test – Stress Management, Entrepreneurship Development Programs – Need, Objectives.

UNIT III BUSINESS

9

Small Enterprises – Definition, Classification – Characteristics, Ownership Structures – Project Formulation – Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno Economic Feasibility Assessment – Preparation of Preliminary Project Reports – Project Appraisal – Sources of Information – Classification of Needs and Agencies.

UNIT IV FINANCING AND ACCOUNTING

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Need – Sources of Finance, Term Loans, Capital Structure, Financial Institution, Management of working Capital, Costing, Break Even Analysis, Taxation – Income Tax, Excise Duty – Sales Tax.

UNIT V SUPPORT TO ENTREPRENEURS

9

Sickness in small Business – Concept, Magnitude, Causes and Consequences, Corrective Measures - Business Incubators – Government Policy for Small Scale Enterprises – Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Sub Contracting.

OUTCOME:

TOTAL: 45 PERIODS

• Upon completion of the course, students will be able to gain knowledge and skills needed to run a business successfully.

TEXT BOOKS:

- 1. Khanka S.S., "Entrepreneurial Development" S.Chand & Co. Ltd., Ram Nagar, New Delhi, 2013.
- 2. Donald F Kuratko, "Entrepreneurship Theory, Process and Practice", Cengage Learning 9th edition, 2014.

REFERENCES:

- 1. EDII "Faulty and External Experts A Hand Book for New Entrepreneurs Publishers:
- 2. Entrepreneurship Development", Institute of India, Ahmadabad, 1986.
- 3. Hisrich R D, Peters M P, "Entrepreneurship" 8th Edition, Tata McGraw-Hill, 2013.
- 4. Mathew J Manimala, Enterprenuership theory at cross roads: paradigms and praxis" 2nd Edition, Dream Tech, 2005.
- 5. Rajeev Roy, 'Entrepreneurship' 2nd Edition, Oxford University Press, 2011.

RO8791

MODELING AND SIMULATION

L T P C 3 0 0 3

OBJECTIVE:

 To provide an overview of how computers are being used in mechanical component design with the use of various CAD standards and to introduce the concepts of Mathematical Modelling of Engineering Problems using FEM with 2D scalar and vector variables problems respectively.

UNIT I MODELLING AND ASSEMBLEY

9

Assembly modelling – interferences of positions and orientation – tolerance analysis-mass property calculations – mechanism simulation and interference checking

UNIT II CAD STANDARDS

Standards for computer graphics- Graphical Kernel System (GKS) - standards for exchange images-Open Graphics Library (OpenGL) - Data exchange standards - IGES, STEP, CALS etc. communication standards

UNIT III INTRODUCTION TO ANALYSIS

9

Basic concepts of the Finite Element Method - Discretization -Meshing — Mesh refinement- Mesh Enrichment- Natural co-ordinate systems -Types of elements- Special Elements- Crack tip Element-Introduction to Analysis Software.

UNIT IV TWO DIMENSIONAL SCALAR VARIABLE PROBLEMS

9

Second Order 2D Equations involving Scalar Variable Functions – Variational formulation –Finite Element formulation – Triangular elements – Shape functions and element matrices and vectors. Application to Field Problems - Thermal problems.

UNIT V TWO DIMENSIONAL VECTOR VARIABLE PROBLEMS

9

TOTAL: 45 PERIODS

Equations of elasticity – Plane stress, plane strain and axisymmetric problems – Body forces and temperature effects – Stress calculations - Plate and shell elements.

OUTCOMES:

CO1: To know the basic concepts of modelling and assembly for different mechanical components

CO2: To know the different types of CAD standards used in modeling of mechanical components

CO3: To know about basic concepts of FEA and analysis software for analyzing mechanical components

CO4: To know about different mathematical techniques used in finite element analysis to solve structural and thermal problems

TEXT BOOKS:

- 1. Ibrahim Zeid "Mastering CAD CAM" Tata McGraw-Hill Publishing Co.2007
- 2. Rao, S.S., "The Finite Element Method in Engineering", 5th Edition, Butterworth Heinemann, 2010



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S.P.G.Chidambara Nadar - C.Nagammal Campus S.P.G.C.Nagar, K.Vellakulam - 625 701, (Near Virudhunagar), Madurai District.

B.E-MECHATRONICS ENGINEERING

Regulation - 2020
AUTONOMOUS SYLLABUS
CHOICE BASED CREDIT SYSTEM (CBCS)
CURRICULUM AND SYLLABI
(III & IV)

VISION:

To make the Department of Mechatronics Engineering the unique of its kind in the field of Research and Development towards Industrial Automation & Robotics.

MISSION:

To impart highly innovative and technical knowledge in Mechatronics Engineering to the urban and unreachable rural student folks through "Total Quality Education"

PROGRAM EDUCATION OBJECTIVES:

Educational objectives of the course Bachelor of Mechatronics Engineering programme can be divided into

PEO 1: Graduates will be able to apply their multi-disciplinary knowledge to formulate, design, develop and analyse Mechatronics Systems.

PEO 2: Graduates will be able to come up with solution for any real time problems in the field of Mechatronics Engineering and allied areas demanded by the Industry and Society.

PEO 3: Graduates will be able to get familiarized with economical issues in Mechatronics Engineering and work in multi-disciplinary teams with ethical code of conduct.



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S.P.G.Chidambara Nadar - C.Nagammal Campus
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BE-MECHATRONICS ENGINEERING

Regulation - 2020
AUTONOMOUS SYLLABUS
CHOICE BASED CREDIT SYSTEM (CBCS)
CURRICULUM AND SYLLABI

(III & IV)

SEMESTER III

SI. No.	COURSE	COURSE TITLE	CATEGORY	\	PER VEE	K	TOTAL CONTACT PERIODS	CREDITS	
				L	Т	Р			
THE	ORY								
1	MA1373	Transforms and Partial	BS	3	1	0	4	4	
'	IVIA 1373	Differential Equations	ВЗ	3	'	0	4	4	
2	EC1371	Digital Electronics	PC	3	0	0	3	3	
3	MT1301	Analog Devices and	PC	3	0	0	3	3	
	1011 1301	Circuits			U		3		
4	MT1302	Fluid Mechanics and	PC	3	0	0	3	3	
4	1011 1302	Thermal Sciences	PC	3	U	0	3		
5	MT1303	Solid Mechanics	PC	3	0	0	3	3	
6	MT1306	Electrical Circuits and	ES	3	0	0	3	3	
	1011 1300	Machines	LS	3	U				
PRA	ACTICAL					I.			
7	MT1311	Solid and Fluid	PC	0	0	4	4	2	
'	WITISTI	Mechanics Laboratory		U	U	4	4		
8	MT1316	Electrical Circuits and	ES	0	0	4	4	2	
	1011 1310	Machines Laboratory		U	U	-	7		
9	HS1321	Interpersonal Skills-	EE	0		2	2	1	
9	1101021	Listening and Speaking		U	0			1	
			TOTAL	18	1	10	29	24	

SEMESTER IV

				Р	ERIO	DS			
SI.	COURSE	COURSE TITLE	CATEGORY		PER		TOTAL		
No.	CODE	COURSE IIILE	CATEGORY	1	WEE	K	CONTACT	CREDITS	
				L	Т	Р	PERIODS	CKEDITS	
THE	ORY		<u> </u>				<u> </u>	1	
_	MA1402	Statistics and	DC	3	1	0	4	4	
1	IVIA 1402	Numerical Methods	BS	3	1	U	4	4	
2	EE1471	Control Systems	PC	3	0	0	3	3	
	LL 147 1	Engineering		3			3		
3	ME1471	Kinematics of	PC	3	0	0	3	3	
٥	IVIC 147 I	Machinery	PC	3		0	3	3	
4	MT1401	Manufacturing	PC	3	0	0	3	3	
4	WH 1401	Technology	PC	3	0	U	3	3	
5	MT1402	Microprocessors	PC	3	0	0	3	3	
	WH 1402	and its Applications		3			3	3	
6	MT1403	Sensors and	PC	3	0	0	3	3	
	WH 1403	Instrumentation	PC	3		0	3	3	
PRA	CTICAL	1				ı		•	
		Manufacturing							
7	MT1411	Technology and	PC	0	0	4	4	2	
		Sensors Laboratory							
		Microprocessors							
8	MT1412	and its Applications	PC	0	0	4	4	2	
		Laboratory							
		Introduction to							
9	HS1421	Advanced Reading	EE	0	0	2	2	1	
		and Writing							
		•	TOTAL	18	1	10	29	24	

Wattmeter 300/600V,5/10A UPF	2
Wattmeter 150/300V,5/10A LPF	2
Wattmeter 300/600V,5/10A LPF	2
Stepper motor 5Kg	1
Synchronous motor 5KW	1
Rheostat 360 ohm/1.2A	3
Tachometer	5
Rheostat 50 ohm/5A	3
Resistors & Breadboards	-
Dual Regulated power supplies	6
Ammeter A.C and D.C	20
Voltmeters A.C and D.C	20

HS1321 INTERPERSONAL SKILLS- LISTENING AND SPEAKING

OBJECTIVES

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 1

The course will enable learners to:

- Equip students with the English language skills required for the successful undertaking
 of academic studies with primary emphasis on academic speaking and listening skills.
- Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities.
- improve general and academic listening skills
- Make effective presentations.

Unit I LISTENING AS A KEY SKILL

6

Listening as a key skill- its importance- speaking – give personal information – ask for personal information – express ability – enquire about ability – ask for clarification - Improving pronunciation– pronunciation basics — stressing syllables and speaking clearly – intonation patterns – conversation starters: small talk.

Unit II LISTEN TO A PROCESS INFORMATION

6

Listen to a process information- give information, as part of a simple explanation — taking lecture notes – preparing to listen to a lecture – articulate a complete idea as opposed to

producing fragmented utterances - compare and contrast information and ideas from multiple sources- converse with reasonable accuracy over a wide range of everyday topics.

Unit III LEXICAL CHUNKING

6

Lexical chunking for accuracy and fluency- factors influence fluency, deliver a five-minute informal talk – greet – respond to greetings – describe health and symptoms – invite and offer –accept – decline – take leave – listen for and follow the gist- listen for detail

Unit IV GROUP DISCUSSION

6

Being an active listener: giving verbal and non-verbal feedback – participating in a group discussion – summarizing academic readings and lectures conversational speech listening to and participating in conversations – persuade- negotiate disagreement in group work.

Unit V GROUP & PAIR PRESENTATIONS

6

Formal and informal talk – listen to follow and respond to explanations, directions and instructions in academic and business contexts – strategies for presentations and interactive communication – group/pair presentations

TOTAL: 30 PERIODS

COURSE OUTCOMES

After successful completion of the course, the students will be able to:

- CO1 Develop their communicative competence in English with specific reference to listening
- CO2 Prepare conversation with reasonable accuracy
- CO3 Apply lexical Chunking for accuracy in speaking
- CO4 Demonstrate their ability to communicate effectively in GDs
- CO5 Explain directions and instructions in academic and business contexts

TEXTBOOKS

- Brooks, Margret, 2011, Skills for Success. Listening and Speaking. Level 4, Oxford University Press, Oxford.
- 2. Richards, C, Jack& David Bholke,2010, *Speak Now Level 3*, Oxford University Press, Oxford.

REFERENCES

- 1. Bhatnagar, Nitin&MamtaBhatnagar,2010, *Communicative English for Engineers and Professionals*, Pearson, New Delhi.
- 2. Hughes, Glyn & Josephine Moate, 2014, *Practical English Classroom*, Oxford University Press, Oxford.
- 3. Vargo, Mari, 2013, Speak Now Level 4, Oxford University Press, Oxford.
- 4. Richards, C, Jack, 2006, Person to Person (Starter), Oxford University Press, Oxford.
- 5. Ladousse, Gillian Porter, 2014, Role Play. Oxford University Press, Oxford.

WEB RESOURCES

- https://www.cambridge.org/elt/blog/wp-content/uploads/2019/10/Learning-Languagein-Chunks.pdf
- 2. https://english.eagetutor.com/english/628-how-to-greet-your-boss-people-in-office.html
- 3. https://www.groupdiscussionideas.com/group-discussion-topics-with-answers/
- 4. https://www.bbc.co.uk/worldservice/learningenglish/business/talkingbusiness/unit3pr esentations/1opening.html

HS1421 AN INTRODUCTION TO ADVANCED READING AND WRITING

L	T	Р	С
0	0	2	1

OBJECTIVES

The Course will enable learners to:

- To strengthen the reading skills of students of engineering.
- To enhance their writing skills with specific reference to technical writing
- To develop their critical thinking skills.
- To provide more opportunities to develop their project and proposal writing skills

UNIT I EFFECTIVE READING

6

Reading – Strategies for effective reading-Use glosses and footnotes to aid reading comprehension- Read and recognize different text types-Predicting content using photos and title. Reading-Read for details-Use of graphic organizers to review and aid comprehension.

UNIT II CRITICAL READING

6

Reading— Understanding pronoun reference and use of connectors in a passage- speed reading techniques. Reading— Genre and Organization of Ideas- Reading— Critical reading and thinking- understanding how the text positions the reader.

UNIT III PARAGRAPH WRITING

6

Writing-Plan before writing- Develop a paragraph: topic sentence, supporting sentences, concluding sentence. Write a descriptive paragraph Writing-State reasons and examples to support ideas in writing- Write a paragraph with reasons and examples- Write an opinion paragraph

UNIT IV ESSAY WRITING

6

Writing- Elements of a good essay-Types of essays- descriptive-narrative- issue-based-argumentative-analytical.

UNIT V EFFECTIVE WRITING

6

Writing- Email writing- visumes - Job application- Report Writing - Project writing-Writing convincing proposals

TOTAL: 30 PERIODS

COURSE OUTCOMES

CO1	Understand how the text positions the reader
CO2	Develop critical thinking while reading a text
CO3	Develop a descriptive paragraph
CO4	Make use of sentence structures effectively when creating an essay
CO5	Demonstrate proper usage of grammar in writing E-Mails, Job application
CO3	and project proposals

TEXT BOOKS

- 1. Gramer, F, Margot & Colin, S, Ward, 2011, *Reading and Writing (Level 3)* Oxford University Press, Oxford.
- 2. Debra Daise, CharlNorloff, and Paul Carne, 2011, *Reading and Writing (Level 4)* Oxford University Press: Oxford.

REFERENCES

- 1. Davis, Jason & Rhonda Llss. *Effective Academic Writing (Level 3)* Oxford University Press: Oxford, 2006
- 2. E. Suresh Kumar and et al. *Enriching Speaking and Writing Skills*. Second Edition. 2012, Orient Black swan:Hyderabad.
- 3. Withrow, Jeans and et al. *Inspired to Write. Readings and Tasks to develop writing skills*. 2004, Cambridge University Press: Cambridge.
- 4. Goatly, Andrew. *Critical Reading and Writing*, 2000, Routledge: United States of America.
- 5. Petelin, Roslyn & Marsh Durham, *The Professional Writing Guide: Knowing Well and Knowing Why*, 2004,Business & Professional Publishing: Australia.

WEB RESOURCES

- 1. http://learnenglishteens.britishcouncil.org/skills/reading
- 2. https://learnenglish.britishcouncil.org/skills/reading
- 3. https://www.readingrockets.org/article/25-activities-reading-and-writing-fun
- 4. https://linguapress.com/advanced.html



(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G.Chidambara Nadar - C.Nagammal Campus

S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

BE-MECHATRONICS ENGINEERING

Regulation - 2020

AUTONOMOUS SYLLABUS

CHOICE BASED CREDIT SYSTEM (CBCS)

CURRICULUM

(V & VI semester)

VISION:

To make the Department of Mechatronics Engineering the unique of its kind in the field of Research and Development towards Industrial Automation & Robotics.

MISSION:

To impart highly innovative and technical knowledge in Mechatronics Engineering to the urban and unreachable rural student folks through "Total Quality Education"

PROGRAM EDUCATION OBJECTIVES:

Educational objectives of the course Bachelor of Mechatronics Engineering programme can be divided into

- **PEO 1:** Graduates will be able to apply their multi-disciplinary knowledge to formulate, design, develop and analyse Mechatronics Systems.
- **PEO 2:** Graduates will be able to come up with solution for any real time problems in the field of Mechatronics Engineering and allied areas demanded by the Industry and Society.
- **PEO 3:** Graduates will be able to get familiarized with economical issues in Mechatronics Engineering and work in multi-disciplinary teams with ethical code of conduct.



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BE-MECHATRONICS ENGINEERING

Regulation - 2020

AUTONOMOUS SYLLABUS

CHOICE BASED CREDIT SYSTEM (CBCS)

CURRICULUM AND SYLLABI

(V & VI semester)

SEMESTER V

				PERIODS		DS		
				PER			TOTAL	
SI.	COURSE				WEEK		CONTACT	CREDITS
No.	CODE	COURSE TITLE	CATEGORY	L	Т	Р	PERIODS	
THE	ORY				-	-	1 =1110 = 0	
					1		T	_
1.	IT1471	Object Oriented Programming using JAVA (Theory Cum Lab)	PC	3	0	2	5	4
2.	MT1501	Machine Design	PC	3	0	0	3	3
3.	MT1502	Machine Dynamics for Mechatronics Engineers	PC	3	0	0	3	3
4.	MT1503	Power Electronic Converters and Drives	PC	3	0	0	3	3
5.	PE1	Professional Elective I	PE	3	0	0	3	3
6.	OE1	Open Elective I	OE	3	0	0	3	3
PR/	PRACTICAL							
7.	MT1511	Power Electronic Converters and	PC	0	0	4	4	2

		Drives laboratory			•			
8.	MT1512	Kinematics and Dynamics Laboratory	PC	0	0	4	4	2
9.	HS1521	Professional Communication	EE	0	0	2	1	1
	TOTAL			18	0	12	29	24

SEMESTER VI

				PERIODS		DS		
	COURCE			PER			TOTAL	
SI.	COURSE	COURSE TITLE	OATEOODY		WEEK		CONTACT	CREDITS
No.	CODE	COURSE TITLE	CATEGORY	L	Т	Р	PERIODS	
THE	THEORY							
1.	MT1601	Design of Mechatronics System	PC	3	0	0	3	3
2.	MT1602	Fluid Power Systems (Theory Cum Lab)	PC	3	0	2	5	4
3.	MT1603	Industrial Automation (Theory Cum Lab)	PC	3	0	2	5	4
4.	PEII	Professional Elective–II	PE	3	0	0	3	3
5.	PEIII	Professional Elective–III	PE	3	0	0	3	3
6.		Online Course	ОС	NPTEL/SWAYAM 3		3		
PR/	PRACTICAL							
7.	MT1621	Design and Fabrication Project for Mechatronics Engineering	EE	0	0	4	4	2
TOTAL			15	0	8	23	22	

HS1521 PROFESSIONAL COMMUNICATION

L	Т	Р	С		
0	0	2	1		

OBJECTIVES:

The course aims to:

- Enhance the Employability and Career Skills of students
- Orient the students towards grooming as a professional
- Make them Employable Graduates
- Develop their confidence and help them attend interviews successfully.

UNIT I 6

Introduction to Soft Skills— Hard skills & soft skills— employability and career Skills— Grooming as a professional with values—Time Management—General awareness of Current Affairs- Error Spotting

UNIT II 6

Self-Introduction-organizing the material – Introducing oneself to the audience – introducing the topic – answering questions with clarity and appropriate pharases – individual presentation practice— presenting the visuals effectively – 5 minute presentations

UNIT III 6

Introduction to Group Discussion— Participating in group discussions – understanding group dynamics – brainstorming the topic – questioning and clarifying –GD strategies-activities to improve GD skills

UNIT IV 6

Interview etiquette – dress code – body language – attending job interviews– telephone/skype interview -one to one interview &panel interview – FAQs related to job interviews

UNIT V 6

Recognizing differences between groups and teams - managing stress- networking professionally- respecting social protocols-understanding career management-developing a long-term career plan-making career changes

TOTAL: 30 PERIODS

COURSE OUTCOMES:

After successful completion of the course, the students will be able to:

CO1: Make effective presentations

CO2: Participate confidently in Group Discussions.

CO3: Participate confidently in Group Discussions.

CO4: Develop adequate Soft Skills required for the workplace

REFERENCES:

- 1. Butterfield, Jeff., 2015, Soft Skills for Everyone, Cengage Learning: New Delhi.
- 2. E. Suresh Kumar et al., 2015, *Communication for Professional Success. Orient Blackswan*: Hyderabad.
- 3.OBS Exports ,2018 *Interact English Lab Manual for Undergraduate Students*. OrientBalckSwan: Hyderabad, .
- 4. Raman, Meenakshi and Sangeeta Sharma. 2014 *Professional Communication*. Oxford University Press: Oxford,
- 5. S. Hariharanet al , 2010 Soft Skills. MJP Publishers: Chennai,