

Department of Automation and Robotics

BOS Meeting Details for the Last Five Years



Minutes of 2016 BOS Meeting

02nd April 2016

Agenda

SI.No	Points to discuss	Documents
1.	Identification of verticals of the department as Automation & Robotics	
2.	Identification of Program specific Core subjects	Curriculum
3.	Identification of Essential electives	structure &
4.	Identification of subjects	Syllabus
5.	Reduction of the credits from 200 to 176	
6.	Review of Syllabus of III & IV Semesters for 2015-19	
7.	Review of Syllabus of V & VI Semesters for 2015-19	
8.	Review of Syllabus of VII & VIII Semesters for 2015-19	
9.	Other points	



General Points:

Points raised	Changes made	Raised By
 HOD welcomed members of BOS-2016 Identified verticals of the department as Mechatronics ,Automation & Informatics & Control under curriculum for A&R program under KLE University. Identification of Program specific Core subjects And electives Discussed the subjects prescribed for Minor in Robotics , which is a 15 credit program. 	Review done and action planned	Mr. Jitendrakumar Kataria, MD Beckhoff Automation Pvt.,Ltd,. Pune. Somashekhar. Hiremath, IIT
 Reviewed the syllabus and action plan . 	Reviewed & found OK	Chennai Dr Dhanesh N Manik, IIT Mumbai
 Reviewed the subjects prescribed for III & IV semester. There is a need to plan an orientation program to all students about the prerequisites needed for every subject prescribed at the beginning of each semester. Reviewed the syllabus structure, sequence of flow and assignment of credits for the subjects under III semester. Division of topics under modules can be implemented for easier and effective implementation of syllabus. Collaboration of teaching faculty members taking related subjects to happen in order to decide on the syllabus before freezing and understand the prerequisites for each subject. 	Review done and action planned	Mr. Jitendrakumar Kataria, MD Beckhoff Automation Pvt.,Ltd,. Pune. Somashekhar. Hiremath , IIT Chennai Dr Dhanesh N Manik, IIT Mumbai
	 HOD welcomed members of BOS-2016 Identified verticals of the department as Mechatronics ,Automation & Informatics & Control under curriculum for A&R program under KLE University. Identification of Program specific Core subjects And electives Discussed the subjects prescribed for Minor in Robotics , which is a 15 credit program. Reviewed the syllabus and action plan . Reviewed the subjects prescribed for III & IV semester. There is a need to plan an orientation program to all students about the prerequisites needed for every subject prescribed at the beginning of each semester. Reviewed the syllabus structure, sequence of flow and assignment of credits for the subjects under III semester. Division of topics under modules can be implemented for easier and effective implementation of syllabus. Collaboration of teaching faculty members taking related subjects to happen in order to decide on the syllabus before freezing and understand the prerequisites for 	 HOD welcomed members of BOS-2016 Identified verticals of the department as Mechatronics, Automation & Informatics & Control under curriculum for A&R program under KLE University. Identification of Program specific Core subjects And electives Discussed the subjects prescribed for Minor in Robotics , which is a 15 credit program. Reviewed the subjects prescribed for III & IV semester. There is a need to plan an orientation program to all students about the prerequisites needed for every subject prescribed at the beginning of each semester. Reviewed the syllabus structure, sequence of flow and assignment of credits for the subjects under III semester. Division of topics under modules can be implemented for easier and effective implementation of syllabus. Collaboration of teaching faculty members taking related subjects to happen in order to decide on the syllabus before freezing and understand the prerequisites for

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	and the activities planned under subjects apart from Minor Exams.		e e e e e e e e e e e e e e e e e e e
	• To plan for more number of quizzes to monitor progress of student learning.		
	 Only one Course project can be planned under each semester so that the requirements under each subject can be addressed. 		
	 Planned to have some subjects like Industrial IOT, Industrial Data networks, Industrial Control Systems conducted by Industry experts and evaluation done through projects instead of semester end exam. 		
4.0	 Review of curricular structure & syllabus of III & IV Semesters for 2015-19 done as per the changes suggested by external and internal members. 		Mr. Jitendrakumar Kataria, MD
5.0	 Review of curricular structure & syllabus of V & VI Semesters for 2015-19 done as per the changes suggested by external and internal members. 	Review done and action	Beckhoff Automation Pvt.,Ltd,. Pune.
6.0	 Review of curricular structure & syllabus of VII & VIII Semesters for 2015-19 done as per the changes suggested by external and internal members. 	planned	Somashekhar. Hiremath , IIT Chennai Dr Dhanesh N Manik, IIT Mumbai



Changes made in Curriculum Content for batch, 2015-19 in VIIIth BOS held in HOD Room, A&R dept. on 02nd April 2016

Approved by:

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson ,HOD, Dept. A&R	A
2	Dr. Somashekhar. Hiremath , IIT Chennai	8
3	Mr.Jitendrakumar. Kataria MD Beckhoff Automation India Pvt.,Ltd,. Pune.	12Kolari E
4	Prof. Dhanesh Manik Department of Mechanical Engineering IIT, Mumbai	Dharar ran
5	Mrs. Jyoti. S. Bali, Asst. Prof. Dept. A&R	J.S balo
6	Mr. Vinodkumar. V. Meti, Asst. Prof. Dept. A&R	Wind
7	Mrs. Manjula P P, Asst. Prof. Dept. A&R	



Resolutions made at 8th BOS meeting held on 02nd April 2016

Time: 10.00 am to 4.30 pm

Venue: HOD Room, Dept .of Automation & Robotics

- 1.0 Resolved to approve III & IV semesters for 2015-19 batch with changes suggested.
- 2.0 Resolved to approve V & VI semesters for 2015-19 batch with changes suggested.
- 3.0 Resolved to approve VII & VIII semesters for 2015-19 batch with changes suggested.

Changes made in Curriculum Content for batches 2013-17, 2014-18 and 2015-19 in VIIIth BOS held in HOD Room, Dept .of Automation & Robotics on 02nd April 2016

Approved By:

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson ,HOD, Dept of A&R	A
2	Dr. Somashekhar. Hiremath , IIT Chennai	8
3	Mr.Jitendrakumar. Kataria MD Beckhoff Automation India Pvt.,Ltd,. Pune.	Mataris
4	Prof. Dhanesh Manik Department of Mechanical Engineering , IIT Mumbai	Dhapur Marin
5	Mrs. Jyoti. S. Bali, Asst. Prof. Dept of A&R	75 Dali
6	Mr. Vinodkumar. V. Meti, Asst. Prof. Dept of A&R	UN rod
7	Mrs. Manjula P P, Asst. Prof. Dept of A&R	R



Department of Automation and Robotics Structure of Board of Studies 2016-17 02nd April 2016

S. No.	Category	Nomination of the Committee		Name of the Person	Signature
1	Concerned Head of the Department/ School/ Center	Chairperson	1	Arunkumar C Giriyapur	
2	ONE Professor, ONE Associate Professor and ONE Assistant	Members	1	Mrs Jyoti Bali	Jisbali
	Professor from the Department/ School/ Center, nominated by		2	Mrs Manjula P.P	() e
	the Dean Academic Affairs		3	Vinod Meti	Mar.
3	ONE PG Coordinator for each of the PG programmes offered by	Member(s)	1		
	the Department/ School/ Center		2		^
3	TWO Subject experts from	Members	1	Dr Somashekar Hiremath	4
	outside the college nominated by the Vice-Chancellor		2	Dr Dhanesh N Manik	Shann more
4	TWO representative from industry corporate sector/ allied area relating to placement		1	Mr Jitendra Kataria, Beckhoff Automation India Pvt. Ltd.	Mare.
	nominated by the Vice- Chancellor	Members	2		
5	ONE Post-graduate meritorious alumnus nominated by the Vice- Chancellor	Member	1		
6	ONE Student Member representing each of the program	Invited Member	1	UG Student (Not Applicable at present)	
	offered by the Department/ School/ Center		2	PG Student (Not Applicable at present)	
			3	PhD Student (Not Applicable at present)	

The concerned Chairman of Board of Studies may invite additional experts to the Departmental Board of Studies as deemed fit.

A Departmental Board of Studies shall:

Meet at least once a year, sufficiently before the commencement;

Prepare detailed curricula and syllabi of concerned Programmes and submit to the Academic Council for approval and publication; and

Revise the curricula and syllabi from time to time and submit to the Academic Council for approval and publication

0	KI P Technological	FORM		
	Ceangliake		Document# :FMCD2006	Rev:1.0
	YY Y	Department of Automation & Robotics		
Re	eview-Cu	rriculum Design and Development		Page of
				Year

2015-19 Batch

Date of Review:02/04/2016

Sr.No	Features reviewed	8	Status of Review	
		Accepted	Accepted with minor changes	Not accepted
01	Overall schemes of the program			
а	Credits		V	
b	Flow		1	
С	Contact hours	V	t	
02	Semester wise curriculum structure			
a	Credits		V	
b	Flow		V	
С	Contact hours	V		
d	Evaluation scheme			
03	Course contents			
а	Subject contents		V	
b	Unitization	V		
С	Reference books		V	
d	Evaluation method			

Changes Suggested (Serial number wise)

1.	To plan an ourantations classes to take up pre-requisitu
>	Sivision of topis under each subject for easier emplorer
8.	To plan for one course peoject under a seriester for
	having algimentents mit under each subject

Reviewed by (use initials)	ACG	SSH	JPK	DNM	JSB	VM	MPP		
Signature	Xe	S	m	Draw	fib	J. Markell	R		

KLE TECH.	Creating Value Leveraging Knowledge	FORM ISO 9001:2008- BVBCET Partment of Atk Engineering	Docun	nent # : FMCD2003		Rev:1.0
Title: Curriculum Strue						Page of
		Semester 2015-19	Batch			Year:
		IV	V	VI	VII	VIII
			V	VI	VII	VIII
	Statistics and integral transforms Calculus and integral transforms	Numerical Methods and partial differential equations Vector calculus and differential		5		
a	Analog & Digital Electronic circuit	Kinematics of Machinery				
with course code	Mechanics of Materials	Mechanics of Materials Control system				
cour	Manufacturing Technology & Metrology	Engineering Design		1		
rse with	Problem solving and programming - I	Machine Design				
Course	Programming Lab -1					
	Machine Drawing Lab	Manufacturing & Metrology lab	ber eine sterne bei erste ihner ist sterne -	2. Oz I. C. C. S. S. S. S.		
	Analog/ Digital electronics lab					
	Kinematics lab					
Approved by (Use Initials)	ACG SSH D	NM JPK 55B	XMMP			
Signature		sun may Me. 755	Wind R			2

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Q'KI KETCH Title		FORM ISO 9001: 2008 – BVBCET Department of A+K Engineering Im Design and Development	Document #: FMCD2007
Sr.No	Agenda	Inputs from members	Decisions
1	Overall scheme of the progr	ram	
a	Credits	Advice for nienor changes	Accepted with changes
b	Flow	Engristed modefication in some	Accepted with changes Accepted with nienoe changes
С	Contact hours	Found ok	Accepted
2	Semester wise curriculum st	ructure	
a	Credits	Verified & found ok.	Accepted.
b	Flow	Verified & found OK. Modefication sneggested Found Ok. Verefiel & found Ok.	Accepted with ninor charges
С	Contact hours	found ok.	Accepted
d	Evaluation scheme	Verepried & found ob.	Accepted Accepted
3	Course contents		
a	Subject contents	Verified for each subject	Accepted.
b	Unitization	Veripied for each subject	A ceepted.
С	Reference books		
d	Evaluation method	Suggestiers or in clusion of 600 faund Ok	Accepted.
Member		SH JPK DNM JSB V	M MP



31ST March 2018

Agenda

SI.No	Points to discuss	Documents
1.	Introduction & Review of Actions initiated from previous BOS meeting	
2.	Review of modifications recommended by the Academic Council or the Principal after BOS 2018.	
3.	General Points	
4.	Review and approval of Syllabi for VII & VIII Semester of the batch 2015-19 , KLE Tech.	Curriculum structure & Syllabus
5.	Review and approval of Syllabi for V & VI Semester of the batch 2016-20 , KLE Tech.	
6.	Review and approval of Syllabi for III & IV Semester of the batch 2017-21, KLE Tech.	
7.	Other points	

Minutes Prepared by

Jyoti Bali

SF

Prof. A. C. Giriyapur

Chairperson, HOD, A&R

Rug

REGISTRAR KLE Technological University HUBBALLI-580 031



SI.No	Points raised	Changes made	Raised By	
1.0 General points	 HOD welcomed members of Third BOS-2018 for KLE Tech Reviewed the minutes of BOS 2017 Review of modifications recommended by the Academic Council or the Principal after BOS 2017. Reviewed the verticals of the department Reviewed the curriculum structure and credit distribution Briefing of Students achievements Participation of Student Team on Delta Robot exhibited at FIESTA-2017 in South Korea Student Participation in Robocon-2018 at Pune, entered Super League round for the first time Development of Basic version of Humanoid Robot under capstone project Projects problems taken up for VRL Transport Company 	Review done and action planned	Mr. Jitendra Kataria, Beckhoff Automation, Pvt.,Ltd. Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai	
2.0 Curriculu m & Syllabus	riculuBriefed about the event Hackathon conducted fomthe subject Algorithm Analysis & Program Design		Mr. Jitendra Kataria, Beckhoff Automation, Pvt. Ltd Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai	

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1.0 General points	 HOD welcomed members of Third BOS-2018 for KLE Tech Reviewed the minutes of BOS 2017 Review of modifications recommended by the Academic Council or the Principal after BOS 2017. Reviewed the verticals of the department Reviewed the curriculum structure and credit distribution Briefing of Students achievements Participation of Student Team on Delta Robot exhibited at FIESTA-2017 in South Korea Student Participation in Robocon-2018 at Pune, entered Super League round for the first time Development of Basic version of Humanoid Robot under capstone project Projects problems taken up for VRL Transport Company 	Review done and action planned	Mr. Jitendra Kataria, Beckhoff Automation, Pvt.,Ltd. Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai	
2.0 Curriculu m & Syllabus	 Review of Syllabi for III & IV Semester of the batch 2017 21, KLE Tech. Sufficient number of hard copies of books in librar to be kept for every subject. Reviewed Syllabus of Kinematics of Machiner theory and Lab was appreciated. Briefed about the event Hackathon conducted for the subject Algorithm Analysis & Program Design 		Mr. Jitendra Kataria, Beckhoff Automation, Pvt. Ltd Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai	

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3.0	 Review of Syllabi for V & VI Semester of the batch 2016-20, KLE Tech. Prerequisites to be mentioned for only electives, not for core subjects. Reviewed Syllabus of Robot Analysis & Design and advised to stick to the same syllabus and do small changes, wherever required. 	
	Summary of the changes proposed for different Courses: 2016-20, V Sem OOP and Python Practice - 16EARP305 (48 hours) Experiments added are OOP fundamentals (6 hrs), concept of arrays, Strings and String Buffer class and exception Handling (6 hrs), swings, (6 hrs) concept of Generic class, Inheritance, Interface and Package (6 hrs), concepts of python scripting elements python constructs, data structures(6 hrs), concept of functions, modules, packages and regular expressions(6 hrs), Python scripting elements and constructs, data structures, and repository of standard library(6 hrs), Solving a Maze problem(6 hrs)	Mr. Jitendra Kataria, Beckhoff Automation, Pvt. Ltd Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai
	DBMS Practice 16EARP306 (48 hours) To improve the database designing proficiency topics were added and practised are -Data base design principles[12hrs],Creation and updation of database[12hrs],Queries-various clauses like joint ,aggregate operations[14hrs],Normalization rules-Normal form,2nd normal form,3rd normal form and BCNF form[10hrs] .	
	Batch 2016-20, VI Sem Power Electronics, Motors & Drives 16EARE301 (20 hours) CHAPTER1. INTRODUCTION TO PE AND ELECTRIC DRIVE SYSTEMS Peripheral Effects, Characteristics and Specifications of Switches5 hrs. CHAPTER NO. 3. THYRISTORS AND COMMUTATION THEORY: Natural and Forced Commutation – Class A and Class B types, Gate Trigger Circuit: Resistance Firing Circuit, Resistance capacitance firing circuit-5 hrs. CHAPTER NO. 4. STATIC	
	Rue Rue	 5

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SWITCHES AND POWER SUPPLIES

Single phase ac static switches, three phase ac static switches, three phase reversing switches, Solid state relays, Design of static switches, DC power supplies, DC Switched Mode DC power supplies, bidirectional power supplies, Switched Mode AC power supplies -5 hrs.CHAPTER NO. 7. STEPPER MOTOR :Principles and Applications of Stepper motor.-5 hrs

Hydraulics and Pneumatics Lab 16EARP302 (12 hours) -Few topics are newly added to the current syllabus based on the inputs from the department review committee and topics added are - Simulation and analysis of fluid power circuit using MATLAB (6 Hours), Exercise on Hydraulic accumulator, Sequential control of drives, control of hydraulic circuits using logic gates (6 Hours).

Batch 2017-21, III Sem

Algorithm Analysis & Program Design 17EARC203 (12 hours)

Topics related to dynamic and greedy methods [12 hrs] were added-Depth First Search and Breadth First Search, The General Method, Warshall's Algorithm, Floyd's Algorithm for the All-Pairs Shortest Paths Problem, Single-Source Shortest Paths, The Traveling Salesperson problem, Kruskal's algorithm, Huffman trees. Analysis of the algorithms were added.

Batch 2017-21, IV Sem

Microcontrollers 17EARC207 (12 hours)

Topics related to AVR Microcontrollers [2 hours] high end processors: architecture and pin definitions of 80386 and 80486, EFLAG Register Of The 80486, 80486 Memory System, Real Address Mode [5 hours] and programming microcontrollers using python: Design Philosophy ,Exploring MicroPython, Object-Oriented Programming and Some Python Basics, Using MicroPython with a Pyboard [5 hours] were introduced. Mr. Jitendra Kataria, Beckhoff Automation, Pvt. Ltd

Dr. Dhanesh Manik, IIT Bombay

Dr.Somashekhar. Hiremath , IIT Chennai



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	Control Systems 17EARC209 (12 hours)		
	Topics related to introduction to time response namely Poles, Zeros, and System Response, First-order system response to step, ramp and impulse inputs was added.(6 hrs) Introduction to PID controller design: Types of Controllers, Mathematical modeling of PID, ON-OFF controller, Effect of Proportional, Derivative and Integral elements on system behavior, Design of controller for simple applications.(4 hrs). Topics related to state space content was added. The General State-Space Representation, Applying the State- Space Representation. (2 hrs)		
	Microcontrollers Lab 17EARP207 (8 hours) To get hands-on experience on PCB design and fabrication exercises related to Design a development board using Atmega328 or PIC 18 using eagle/ Dip-trace [3 hours], Develop a printed circuit board (PCB) for your designed Atmega328 or PIC18 development board[2hours], Design a programmer for your PIC18 development board to burn the program using PICkit2[3 hours]		
	Review and approval of Syllabi for VII & VIII Semester of	1 5450	
4.0	 the batch 2015-19, KLE Tech. Reviewed core subjects and electives prescribed Subject to be named as Mechanical Measurements for the VI semester core course Changes in the syllabus content of elective Industrial Data Networks to be proposed and sent to external BOS members for approval. Additional electives with syllabus to be proposed for BOS approval. External BOS members suggested for choosing Titles of the subjects carefully. Reviewed Syllabus of electives, Manufacturing 		Mr. Jitendra Kataria, Beckhoff Automation, Pvt.,Ltd Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai

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Reviewed syllabus of Parallel Computing and	
suggested for inclusion of practice using soft	
PLC to demonstrate parallel computing	
Suggested to launch Open Electives from	
Dept.	

Changes made in Curriculum Content for III and IV Semester of batch 2017-21, IV & V Semester of the batch 2016-20, VII & VIII Semester of the batch 2015-19, in III BOS held in HOD Room, A&R dept. on 31st March 2018

Approved by:

SI No	Members, BOS	Signature
1.	Prof. A. C. Giriyapur, Chairperson, HOD, A&R	And.
2.	Dr. Somashekhar. Hiremath , IIT Chennai	8
3.	Mr. Jitendra Kataria, Beckhoff Automation Pvt. Ltd.	ng.
4.	Prof. Dhanesh Manik, Dept. of Mechanical Engineering , IIT, Mumbai	Dhoun proj
5.	Mrs. Jyoti Bali, Asst. Prof. A&R	JSKal
6.	Mr. Vinodkumar Meti, Asst. Prof. A&R	Jered.
7.	Mr. Nagaraj B. Asst. Prof. A&R	NEO
8.	Mr. Shridhar D. Asst. Prof. A&R	Fisher



Resolutions Made During the 3rd Board of Studies Meeting held on 1st April 2017 , in HOD Room, A&R dept. on 31st March 2018

- 1.0 Resolved to approve Syllabi for III and IV Semester of batch 2017-21, KLE Tech. as per the changes suggested by external and internal members
- 2.0 Resolved to approve Syllabi for, V & VI Semester of the batch 2016-20, KLE Tech. as per the changes suggested by external and internal members
- 3.0 Resolved to approve Syllabi for, VII & VIII Semester of the batch 2015-19, KLE Tech. as per the changes suggested by external and internal members

Changes made in Curriculum Content for III and IV Semester of batch 2017-21, V & VI Semester of the batch 2016-20, VII & VIII Semester of the batch 2015-19, in III BOS held in HOD Room, A&R dept. on 31st March 2018 **Approved by:**

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A&R	Ant
2	Dr. Somashekhar. Hiremath, IIT Chennai	Ø
3	Mr. Jitendra Kataria, Beckhoff Automation Pvt. Ltd.	me.
4	Prof. Dhanesh Manik, Dept. of Mechanical Engineering , IIT, Mumbai	Dhanne han
5	Mrs. Jyoti Bali, Asst. Prof. A&R	Jibahi
6	Mr. Vinodkumar Meti, Asst. Prof. A&R	Julia
7	Mr. Nagaraj B. Asst. Prof. A&R	NED
8	Mr. Shridhar D. Asst. Prof. A&R	Fietha



KLE Society's KLE Technological University DEPARTMENT OF AUTOMATION & ROBOTICS

Department of Automation & Robotics Structure of Board of Studies 2018-19 01st April 2018

S. No.	Category	Nomination of the Committee		Name of the Person	Signature
1	Concerned Head of the Department/ School/ Center	Chairperson	1	Arunkumar C Giriyapur	July 1
2	ONE Professor, ONE Associate Professor and ONE Assistant	Members		Mrs Jyoti Bali	Fishel
	Professor from the Department/ School/ Center, nominated by			Mr Vinod Meti	J. S.
	the Dean Academic Affairs			Mr. Nagaraj.M.B	NOGT
				Mr. Shridhar D	Fidder.
3	ONE PG Coordinator for each of	Member(s)	1		
	the PG programmes offered by the Department/ School/ Center		2		
3	TWO Subject experts from outside the college nominated by	Members	1	Dr Somashekar Hiremath IIT Chennai	R
	the Vice-Chancellor	e-Chancellor		Dr Dhanesh N Manik IIT Mumbai	Dhann Mani
4	TWO representative from industry corporate sector/ allied area relating to placement	Members	1	Mr. Jitendra Kataria, Beckhoff Automation Pvt. Ltd. Pune	sixetans
	nominated by the Vice- Chancellor	Members	2		
5	ONE Post-graduate meritorious alumnus nominated by the Vice- Chancellor	Member	1		
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Department of Automation & Robotics Structure of Board of Studies 2018-19 01st April 2018

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	Professor from the Department/ School/ Center, nominated by			Mr Vinod Meti	S. S.
	the Dean Academic Affairs			Mr. Nagaraj.M.B	NEG
				Mr. Shridhar D	Fidda.
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	the Vice-Chancellor		2	Dr Dhanesh N Manik IIT Mumbai	Dhann Mani
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\sim	FORM University Galagian Report Water Department of Automation & Robotics		Docum #: FMCD2		Rev	: 1.0
Revi	ew-Curriculum Design and Development				Page 1 of 1	
					Year:2018	
	2015- 19 Batch				Date of Revie	w:01/04/2018
Sr.No	Features reviewed			Statu	us of Review	
		Acc	cepted	Accep change	ted with minor es	Not accepted
01	Overall schemes of the program					
а	Credits		V			
b	Flow	34		[]	~	
С	Contact hours		V			
02	Semester wise curriculum structure			. Allark		
а	Credits		V			
b	Flow			1		
С	Contact hours					
d	Evaluation scheme			L	/	
03	Course contents					A Section No.
а	Subject contents					
b	Unitization		~			
С	Reference books				V	
d	Evaluation method			(/	

Changes Suggested (Serial number wise)
1) Vorified syllabus of fobot Dynamics of Control
& suggisted necessary charges
2) Suggested los add sufficient copies of textbook
2) Juggented los add sufficient copies of textbook
3. Actustic planned of Evaluation nectuods
alanned verified of found ok
Reviewed by (Use initials) Dr. Somashek/nar. Dr Dhanesh N Mr. Jitendra Hiremath Manik Kataria A.C.Giriyapur Kataria
Signature Dhan Mars Shuli Ssin MD J Fithe

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	Form University Cargitale Approximation & Robotics		Documo #: FMCD20		Rev:	1.0
Revie	ew-Curriculum Design and Development				Page 1 of 1	
					Year:2018	
	2016- 20 Batch				Date of Revie	w:01/04/201
Sr.No	Features reviewed			Sta	tus of Review	
		Acc	epted	Acce chan	pted with minor ges	Not accepted
01	Overall schemes of the program					
а	Credits		V			
b	Flow				V	
С	Contact hours		V.			
02	Semester wise curriculum structure					
а	Credits		V		×	
b	Flow				V	
С	Contact hours		\sim			
d	Evaluation scheme					
03	Course contents					
а	Subject contents		25-1		~.	
b	Unitization		V			
С	Reference books					
d	Evaluation method				1	

Changes	Suggested (Serial number wise)
N.	checked far credit destribution of specific
	publicits of found ok.
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Reviewed by (Use initials)	Dr. Somashekhar. Hiremath		Mr. Jitendra Kataria	A.C.Giriyapur	Mrs.Jyoti Bali	Mr . Vinod Meti	Mr.Nagaraj M B	Mr. Shridhar D
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	FORM University ISO 9001: 2008 – BVBCET Department of Automation & Robotics		Document #: FMCD2006		Rev: 1.0		
Revie	w-Curriculum Design and Development				Page 1 of 1		
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5.	Sufficient copies & books both Texbook & reference
	book to be plainlained

Reference books

Evaluation method

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Reviewed by (Use initials)	Dr. Somashekhar. Hiremath	Dr Dhanesh N Manik	Mr. Jitendra Kataria	A.C.Giriyapur	Mrs.Jyoti Bali	Mr . Vinod Meti	Mr.Nagaraj M B	Mr. Shridhar D
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Q.		Technological University Rating Value ging Knowledge Dep	FORM ISO 9001:2008- BVBC artment of Automation 8			Do	ocument # : FMCD2	003	Rev:1.0
		ð.	Title	Curriculum Struct	ture- Overall				Page of Year:2018
	Semeste	er 2017-21 Batch							
	III		IV	V	VI		VII	VIII	
	Analog	& Digital Electronic circuits	Kinematics of Machinery						
	Mechanics of Materials		Control system						
01	Manufacturing Technology & Metrology		Machine Design						
e code	Engineering Design Practise		Microcontrollers						
cours	Algorithm analysis & program design		Product Realization						
Course with course code	Machine	e Drawing Lab	Manufacturing & Metrology lab						
Cour	Analog	& Digital electronics lab	Microcontroller Lab						
	Statistic	s And Integral Transforms	Kinematics lab				1		
	Calculus	s And Integral Transforms	Numerical methods and partial differential equations						
		v	Vector calculus and differential equations						
	oved by Initials)	Dr. Somashekhar. Hiremath	Dr Dhanesh N Manik Mr.	Jitendra Kataria	A.C.Giriyapur	Mrs.Jyoti Bali	Mr.Vinod Meti	Mr.Nagaraj M B	Mr. Shridhar [
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		Title: Cur	riculum Structure- Overall			Page of Year:2018
	Semester 2016-20 Batch					
		IV	V	VI	VII	VIII
	Analog & Digital Electronic circuits	Kinematics of Machinery	Robot Analysis & Design	Real Time Embedded Systems		
ode	Mechanics of Materials	Microcontrollers	Hydraulics & Pneumatic	OOP & Python Practice		
	Manufacturing Technology	Machine Design	Mechatronics System Design	DBMS Practice		
	Algorithm analysis & program desi	gn Control systems	Programming Industrial Automation	Power Electronics Motors and Drives (Department elective)		
with course code	Engineering Design	Product Realization	Mechatronics Lab	Computer Vision & Digital Image Processing (Department elective)		
	Analog & Digital electronics lab	Manufacturing & Metrology lab	Automation Lab	Computer-Integrated Manufacturing (Department elective)		
)	Statistics And Integral Transforms	Kinematics lab	Mini Project	Robotics Lab		
	Calculus And Integral Transforms	Microcontroller Lab	Numerical Methods And Statistics	Hydraulics & Pneumatics Lab		
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1	Mechanics of Materials		als Control system		Hydrauli	Hydraulics & Pneumatic		& Python Practice	Robot Dynamics, Control and Parallel Manipulators	Department election		
1	Manufacturing Technology & Metrology		Machine Design		Mechatronics System Design		DBMS Practice		Parallel Computing (Department elective)	Open Elective		
0	Algorithm analysis & program design		Microcontrollers		Programming Industrial Automation		Power Electronics Motors and Drives		Manufacturing Execution Systems (Department elective)	HSS 3 – AFM		
	Machine Drawing Lab		Engineering Desig	Engineering Design Practice		onics Lab		uter Vision & Digital Processing	Open Elective	Project -2		
4	Analog & Digital electronics lab		Manufacturing & Metrology lab		Automation Lab		Comp	uter-Integrated facturing	HSS 2 – MTP			
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	ed by itials)	Dr. Somashekhar. Hiremath	Dr Dhanesh N Manik	Mr Jitendra K	ataria	A.C.Giriyapur		Mrs.Jyoti Bali M	r.Vinod Meti Mr.Nagara	j M B Mr. Shridhar D		

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Initials) Dr. Soma	shekhar Hiremath	Dr Dhanesh N Manik	Mr. Jitendra Kataria	Prof A.C.Giriyapur	Mrs Jyoti Bali	Mr.Vinod Meti	Mr.Nagaraj M B	Mr.Shridhar D
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31ST March 2018

Agenda

SI.No	Points to discuss	Documents
1.	Introduction & Review of Actions initiated from previous BOS meeting	
2.	Review of modifications recommended by the Academic Council or the Principal after BOS 2018.	
3.	General Points	
4.	Review and approval of Syllabi for VII & VIII Semester of the batch 2015-19 , KLE Tech.	Curriculum structure & Syllabus
5.	Review and approval of Syllabi for V & VI Semester of the batch 2016-20 , KLE Tech.	Synabus
6.	Review and approval of Syllabi for III & IV Semester of the batch 2017-21, KLE Tech.	
7.	Other points	

Minutes Prepared by

TSP

Jyoti Bali

Prof. A. C. Giriyapur Chairperson, HOD, A&R

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REGISTRAR KLE Technological University HUBBALLI-580 031



SI.No	Points raised	Changes made	Raised By
1.0 General points	 HOD welcomed members of Third BOS-2018 for KLE Tech Reviewed the minutes of BOS 2017 Review of modifications recommended by the Academic Council or the Principal after BOS 2017. Reviewed the verticals of the department Reviewed the curriculum structure and credit distribution Briefing of Students achievements Participation of Student Team on Delta Robot exhibited at FIESTA-2017 in South Korea Student Participation in Robocon-2018 at Pune, entered Super League round for the first time Development of Basic version of Humanoid Robot under capstone project Projects problems taken up for VRL Transport Company 	Review done and action planned	Mr. Jitendra Kataria, Beckhoff Automation, Pvt.,Ltd. Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai
2.0 Curriculu m & Syllabus	 Review of Syllabi for III & IV Semester of the batch 2017- 21, KLE Tech. Sufficient number of hard copies of books in library to be kept for every subject. Reviewed Syllabus of Kinematics of Machinery theory and Lab was appreciated. Briefed about the event Hackathon conducted for the subject Algorithm Analysis & Program Design (AAPD) As per Academic Council suggestion, Engineering Design introduced at III semester followed by Product Realization subject. No much major changes suggested in III & IV Sem Syllabus theory content. 	Review done and action planned	Mr. Jitendra Kataria, Beckhoff Automation, Pvt. Ltd Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar. Hiremath , IIT Chennai

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	Review of Syllabi for V & VI Semester of the batch 2016-	
	20 , KLE Tech.	
	• Prerequisites to be mentioned for only electives, not for	
3.0	core subjects.	
5.0		
	Reviewed Syllabus of Robot Analysis & Design and advised to stick to the same cull-law of the second seco	
	advised to stick to the same syllabus and do small	
	changes, wherever required.	
	Summary of the changes proposed for different Courses:	Mr. Jitendra
	2016-20, V Sem	Kataria, Beckho Automation,
	OOP and Python Practice - 16EARP305 (48 hours)	Pvt. Ltd
	Experiments added are OOP fundamentals (6 hrs), concept of	FVI. LIU
	arrays, Strings and String Buffer class and exception Handling	Dr. Dhanesh
	(6 hrs), swings, (6 hrs) concept of Generic class, Inheritance,	Manik, IIT
	Interface and Package (6 hrs), concepts of python scripting	Bombay
	elements python constructs, data structures(6 hrs), concept	
	of functions, modules, packages and regular expressions(6	Dr.Somashekha
	hrs), Python scripting elements and constructs, data	Hiremath , IIT
	structures, and repository of standard library(6 hrs), Solving a	Chennai
	Maze problem(6 hrs)	- 1
	DBMS Practice 16EARP306 (48 hours)	
	To improve the database designing proficiency topics were	
	added and practised are -Data base design	
	principles[12hrs],Creation and updation of	
	database[12hrs], Queries-various clauses like joint , aggregate	
	operations[14hrs],Normalization rules-Normal form,2nd	
	normal form,3rd normal form and BCNF form[10hrs] .	
	Batch 2016-20, VI Sem	
	Power Electronics, Motors & Drives 16EARE301 (20 hours)	
	CHAPTER1. INTRODUCTION TO PE AND ELECTRIC DRIVE	10.00
	SYSTEMS Peripheral Effects, Characteristics and	
	Specifications of Switches5 hrs. CHAPTER NO. 3.	
	THYRISTORS AND COMMUTATION THEORY: Natural and	
	Forced Commutation – Class A and Class B types, Gate	
	Trigger Circuit: Resistance Firing Circuit, Resistance	
	capacitance firing circuit-5 hrs. CHAPTER NO. 4. STATIC	 1

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SWITCHES AND POWER SUPPLIES

Single phase ac static switches, three phase ac static switches, three phase reversing switches, Solid state relays, Design of static switches, DC power supplies, DC Switched Mode DC power supplies, bidirectional power supplies, Switched Mode AC power supplies -5 hrs.CHAPTER NO. 7. STEPPER MOTOR :Principles and Applications of Stepper motor.-5 hrs

Hydraulics and Pneumatics Lab 16EARP302 (12 hours) -Few topics are newly added to the current syllabus based on the inputs from the department review committee and topics added are - Simulation and analysis of fluid power circuit using MATLAB (6 Hours), Exercise on Hydraulic accumulator, Sequential control of drives, control of hydraulic circuits using logic gates (6 Hours).

Batch 2017-21, III Sem

Algorithm Analysis & Program Design 17EARC203 (12 hours)

Topics related to dynamic and greedy methods [12 hrs] were added-Depth First Search and Breadth First Search, The General Method, Warshall's Algorithm, Floyd's Algorithm for the All-Pairs Shortest Paths Problem, Single-Source Shortest Paths, The Traveling Salesperson problem, Kruskal's algorithm, Huffman trees. Analysis of the algorithms were added.

Batch 2017-21, IV Sem

Microcontrollers 17EARC207 (12 hours)

Topics related to AVR Microcontrollers [2 hours] high end processors: architecture and pin definitions of 80386 and 80486, EFLAG Register Of The 80486, 80486 Memory System, Real Address Mode [5 hours] and programming microcontrollers using python: Design Philosophy, Exploring MicroPython, Object-Oriented Programming and Some Python Basics, Using MicroPython with a Pyboard [5 hours] were introduced. Mr. Jitendra Kataria, Beckhoff Automation, Pvt. Ltd

Dr. Dhanesh Manik, IIT Bombay

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Dr.Somashekhar. Hiremath , IIT Chennai



	Control Systems 17EARC209 (12 hours)	
	Topics related to introduction to time response namely Poles, Zeros, and System Response, First-order system response to step, ramp and impulse inputs was added.(6 hrs) Introduction to PID controller design: Types of Controllers, Mathematical modeling of PID, ON-OFF controller, Effect of Proportional, Derivative and Integral elements on system behavior, Design of controller for simple applications.(4 hrs). Topics related to state space content was added. The General State-Space Representation, Applying the State- Space Representation. (2 hrs)	
	Microcontrollers Lab 17EARP207 (8 hours) To get hands-on experience on PCB design and fabrication exercises related to Design a development board using Atmega328 or PIC 18 using eagle/ Dip-trace [3 hours], Develop a printed circuit board (PCB) for your designed Atmega328 or PIC18 development board[2hours], Design a programmer for your PIC18 development board to burn the program using PICkit2[3 hours]	
4.0	 Review and approval of Syllabi for VII & VIII Semester of the batch 2015-19, KLE Tech. Reviewed core subjects and electives prescribed Subject to be named as Mechanical Measurements for the VI semester core course Changes in the syllabus content of elective Industrial Data Networks to be proposed and sent to external BOS members for approval. Additional electives with syllabus to be proposed for BOS approval. External BOS members suggested for choosing Titles of the subjects carefully. Reviewed Syllabus of electives, Manufacturing 	Mr. Jitendra Kataria, Beckhof Automation, Pvt.,Ltd Dr. Dhanesh Manik, IIT Bombay Dr.Somashekhar Hiremath , IIT Chennai

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•	Reviewed syllabus of Parallel Computing and suggested for inclusion of practice using soft PLC to demonstrate parallel computing	
•	Suggested to launch Open Electives from Dept.	
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Reviewed syllabus of Parallel Computing and	
suggested for inclusion of practice using soft	
PLC to demonstrate parallel computing	
Suggested to launch Open Electives from	
Dept.	

Changes made in Curriculum Content for III and IV Semester of batch 2017-21, IV & V Semester of the batch 2016-20, VII & VIII Semester of the batch 2015-19, in III BOS held in HOD Room, A&R dept. on 31st March 2018

Approved by:

SI No	Members, BOS	Signature
1.	Prof. A. C. Giriyapur, Chairperson, HOD, A&R	And.
2.	Dr. Somashekhar. Hiremath , IIT Chennai	Ø
3.	Mr. Jitendra Kataria, Beckhoff Automation Pvt. Ltd.	ng.
4.	Prof. Dhanesh Manik, Dept. of Mechanical Engineering , IIT, Mumbai	Dhanne proj
5.	Mrs. Jyoti Bali, Asst. Prof. A&R	Iskal:
6.	Mr. Vinodkumar Meti, Asst. Prof. A&R	Jest and
7.	Mr. Nagaraj B. Asst. Prof. A&R	NED
8.	Mr. Shridhar D. Asst. Prof. A&R	Fisher



Resolutions Made During the 3rd Board of Studies Meeting held on 1st April 2017 , in HOD Room, A&R dept. on 31st March 2018

- 1.0 Resolved to approve Syllabi for III and IV Semester of batch 2017-21, KLE Tech. as per the changes suggested by external and internal members
- 2.0 Resolved to approve Syllabi for, V & VI Semester of the batch 2016-20, KLE Tech. as per the changes suggested by external and internal members
- 3.0 Resolved to approve Syllabi for, VII & VIII Semester of the batch 2015-19, KLE Tech. as per the changes suggested by external and internal members

Changes made in Curriculum Content for III and IV Semester of batch 2017-21, V & VI Semester of the batch 2016-20, VII & VIII Semester of the batch 2015-19, in III BOS held in HOD Room, A&R dept. on 31st March 2018 Approved by:

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A&R	Au.
2	Dr. Somashekhar. Hiremath, IIT Chennai	Q
3	Mr. Jitendra Kataria, Beckhoff Automation Pvt. Ltd.	nu.
4	Prof. Dhanesh Manik, Dept. of Mechanical Engineering , IIT, Mumbai	Dhaw han
5	Mrs. Jyoti Bali, Asst. Prof. A&R	Jubah
6	Mr. Vinodkumar Meti, Asst. Prof. A&R	Julind .
7	Mr. Nagaraj B. Asst. Prof. A&R	NOO
8	Mr. Shridhar D. Asst. Prof. A&R	Fisher



KLE Society's KLE Technological University DEPARTMENT OF AUTOMATION & ROBOTICS

Department of Automation & Robotics Structure of Board of Studies 2018-19 01st April 2018

S. No.	Category	Nomination of the Committee		Name of the Person	Signature
1	Concerned Head of the Department/ School/ Center	Chairperson	1	Arunkumar C Giriyapur	
2	ONE Professor, ONE Associate Professor and ONE Assistant	Members		Mrs Jyoti Bali	Fishel
	Professor from the Department/ School/ Center, nominated by		-	Mr Vinod Meti	Jan .
	the Dean Academic Affairs			Mr. Nagaraj.M.B	NBS
				Mr. Shridhar D	Fidder.
3	ONE PG Coordinator for each of	Member(s)	1		
	the PG programmes offered by the Department/ School/ Center		2		
3	TWO Subject experts from outside the college nominated by the Vice-Chancellor	Members	1	Dr Somashekar Hiremath IIT Chennai	R
			2	Dr Dhanesh N Manik IIT Mumbai	Dhann Man
4	TWO representative from industry corporate sector/ allied area relating to placement nominated by the Vice- Chancellor	Members	1	Mr. Jitendra Kataria, Beckhoff Automation Pvt. Ltd. Pune	sixetans
		Members	2		
5	ONE Post-graduate meritorious alumnus nominated by the Vice- Chancellor	Member	1		
6	ONE Student Member representing each of the program	Invited Member	1	UG Student (Not Applicable at present)	
	offered by the Department/ School/ Center		2	PG Student (Not Applicable at present)	
			3	PhD Student (Not Applicable at present)	

The concerned Chairman of Board of Studies may invite additional experts to the Departmental Board of Studies as deemed fit.

A Departmental Board of Studies shall:

Meet at least once a year, sufficiently before the commencement;

Prepare detailed curricula and syllabi of concerned Programmes and submit to the Academic Council for approval and publication; and

Revise the curricula and syllabi from time to time and submit to the Academic Council for approval and publication

	FORM University University ISO 9001: 2008 – BVBCET Department of Automation & Robotics	Document #: FMCD2006	Rev: 1.0
Revi	ew-Curriculum Design and Development	Page 1 of 1	
			Year:2018
	2015- 19 Batch		Date of Review:01/04/2018
Sr.No	Features reviewed	Stat	us of Review

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Reviewed by (Use initials)	Dr. Somashekhar. Dr Dhanesh N Mr. Jitendra A.C.Giriyapur Mrs.Jyoti Bali Mr. Vinod Meti Mr.Nagaraj M B Mr. Shridhar I Hiremath
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Reviewed by (Use initials)	Dr. Somashekhar. Hiremath		Mr. Jitendra Kataria	A.C.Giriyapur	Mrs.Jyoti Bali	Mr . Vinod Meti	Mr.Nagaraj M B	Mr. Shridhar D
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Changes	s Suggested (Serial number wise)
1.	Credit des pribution par courses verified of foundor
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Reviewed by (Use initials)	Dr. Somashekhar. Hiremath		Mr. Jitendra Kataria	A.C.Giriyapur	Mrs.Jyoti Bali	Mr . Vinod Meti	Mr. Nagaraj M B D
Signature	Q	Dhann	my	J	Jestuch	- Univer	NES & Fills

Q	KLE Technological University Creating Value Leveraging Knowledge	FORM ISO 9001:2008- BVBCE Department of Automation &	Contract Change of Contract of State		D	ocument # : FMCD20	003	Rev:1.0
		Title:	Curriculum Struct	ture- Overall				Page of Year:2018
	Semester 2017-21 Batch							1001.2010
	111	IV	V	VI		VII	VIII	
	Analog & Digital Electronic circu	its Kinematics of Machinery						
	Mechanics of Materials	Control system						
0	Manufacturing Technology & Metrology	Machine Design					e:	
e cod	Engineering Design Practise	Microcontrollers						
with course code	Algorithm analysis & program de	esign Product Realization						
se with	Machine Drawing Lab	Manufacturing & Metrology lab						
Course	Analog & Digital electronics lab	Microcontroller Lab						
	Statistics And Integral Transform	ns Kinematics lab				2		
	Calculus And Integral Transform	Numerical methods and partial differential equations						
		Vector calculus and differential equations						
	oved by Initials) Dr. Somashekhar. Hiremath		itendra Kataria	A.C.Giriyapur	Mrs.Jyoti Bali	Mr.Vinod Meti	Mr.Nagaraj M B	Mr. Shridhar D

Q [*] EOH Ministra	KLE Technological University Creating Value Leveraging Knowledge Dep	FORM ISO 9001:2008- BVBCET artment of Automation & Rol	botics	Document # : FMCD2003		Rev:1.0
		Title: Curi	riculum Structure- Overall			Page of
	Semester 2016-20 Batch					Year:2018
	Semester 2010-20 Datti					
	III	IV	V	VI	VII	VIII
	Analog & Digital Electronic circuits	Kinematics of Machinery	Robot Analysis & Design	Real Time Embedded Systems		
	Mechanics of Materials	Microcontrollers	Hydraulics & Pneumatic	OOP & Python Practice		
	Manufacturing Technology	Machine Design	Mechatronics System Design	DBMS Practice		
se cod	Algorithm analysis & program design	Control systems	Programming Industrial Automation	Power Electronics Motors and Drives (Department elective)		
Course with course code	Engineering Design Product Realization		Mechatronics Lab	Computer Vision & Digital Image Processing (Department elective)		
ourse	Analog & Digital electronics lab	Manufacturing & Metrology lab	Automation Lab	Computer-Integrated Manufacturing (Department elective)		
0	Statistics And Integral Transforms	Kinematics lab	Mini Project	Robotics Lab		
	Calculus And Integral Transforms	Microcontroller Lab	Numerical Methods And Statistics	Hydraulics & Pneumatics Lab		
		numerical methods and partial differential equations		Real Time Embedded Systems Lab		
		vector calculus and differential equations		Minor project		
	proved by Dr. Somashekhar. D se Initials) Hiremath	r Dhanesh N Mr. Jitendra Manik Kataria	A.C.Giriyapur Mrs.Jyoti Bali	Mr.Vinod Meti Mr.Naga	araj M B	Mr. Shridhar [

2	ILLC (Creatin	echnological Jniversity ^{g Value} Knowledge	ISO 900 Department of	FORM 1:2008- BVBC Automation 8		S		Docur	nent # : FMCD2003		Rev:1.0
				Title: Cu	rriculum St	tructure- Overall					Page of
	Semester	2015-19 Batch									Year:2018
	111		IV		V		VI		VII		VIII
	Analog & circuits	Digital Electronic	Kinematics of Ma	chinery	Robot Analysis & Design		Real Time Embedded Systems		s Measurements		Department elective
	Mechanics of Materials		Control system	stem Hydraulics & Pneumatic		OOP & Python Practice			Robot Dynamics, Control and Parallel Manipulators		
	Manufacturing Technology & Metrology		Machine Design		Mechatronics System Design		DBMS Practice		Parallel Computing (Department elective)		Open Elective
e code	Algorithm analysis & program design		Microcontrollers	ontrollers Programming Indust Automation			Power Electronics Motors and Drives		Manufacturing Systems	Manufacturing Execution Systems (Department elective)	
with course code	Machine Drawing Lab		Engineering Design Practice		Mechatronics Lab		Computer Vision & Digital Image Processing		Open Elective	cetive)	Project -2
se witt	Analog &	Digital electronics lab	Manufacturing &	Metrology lab	Automat	ion Lab	Compu	ter-Integrated acturing	HSS 2 – MTP		
course	Statistics And Integral Transforms		Microcontroller I	ab	Mini Proj	ject	Roboti	cs Lab	CIPE		
	Calculus And Integral Transforms		Kinematics lab		Numerical Methods And Statistics		Hydraulics & Pneumatics Lab		Project -1		
			Numerical metho differential equa				Real Ti Lab	me Embedded System	S		
			Vector calculus a equations	nd differential			Minor	project			
App (Us	roved by e Initials)	Dr. Somashekhar. Hiremath	Dr Dhanesh N Manik	Mr Jitendra k	Kataria	A.C.Giriyapur		Mrs.Jyoti Bali	Mr.Vinod Meti	Mr.Nagaraj M	M B Mr. Shridhar D
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FORM Document #: ISO 9001: 2008 – BVBCET Document #: Department of Automation & Robotics Page :] of 1 Title: Verification-Curriculum Design and Development 2017-21 Batch Page :] of 1

Year:2018

Sr.No Agenda Inputs from members Decisions Verification status A AMC NA Overall scheme of the program 1 checked credit destributes es Credits Found а OK ~ Found Ok 0 ADC verified b Flow 1/ KOM Contact hours С 06 our head 4 1 2 Semester wise curriculum structure checked Credits Lound OD а b Flow V 11 11 Contact hours С 4 11 **Evaluation scheme** d 51 3 **Course contents** Subject contents а ound Ole veret Unitization b OF book heer 0 82 С Reference books 1 Verefid d 👗 Evaluation method found ok V $\sim 10^{-10}$

Members (Use Initials)	Dr. Somashekhar Hiremath	Dr Dhanesh N Manik	Mr. Jitendra Kataria	Prof A.C.Giriyapur	Mrs Jyoti Bali	Mr.Vinod Meti	Mr.Nagaraj M B Mr.	.Shridhar D
Signature		Dharm Mari	Ma	L	Jokahi	Allred.	MED J	Falls

A: Accepted AMC: Accepted under Minor Changes NA: Not Accepted

KLE Technological Country Country Country Country Review	FORM ISO 9001: 2008 – BVBCET Department of Automation & Robotics	Document #: FMCD2007	Rev: 1.0
Title: Verification-C	urriculum Design and Development 2016-20 Batch		Page : of
	3		Year:2018

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Signati	ure	Dham some MUS	JSK-L' Strand MED	9	FA	A

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13th April 2019

Agenda

SI.No	Points to discuss	Documents
1.	Introduction & Review of Actions initiated from previous BOS meeting	
2.	Review of modifications recommended by the Academic Council or the Principal after BOS 2019.	
3.	General Points	
4.	Review and approval of Syllabi for VII & VIII Semester of the batch 2016-20, KLE Tech.	Curriculum structure & Syllabus
5.	Review and approval of Syllabi for V & VI Semester of the batch 2017-21 , KLE Tech.	
6.	Review and approval of Syllabi for III & IV Semester of the batch 2018-22 , KLE Tech.	
7.	Other points	

Minutes Prepared by Jyoti Bali

Prof. A. C. Giriyapur

Chairperson, HOD, A&R

Gard

REGISTRAR KLE Technological University HUBBALLI-560 031



SI.No	Points raised	Changes made	Raised By
1.0 General points	 HOD welcomed members of Fourth BOS-2019 for KLE Tech Reviewed the minutes of BOS 2018. Review of modifications recommended by the Academic Council or the Principal after BOS 2018. Reviewed the verticals of the department. Reviewed the curriculum structure and credit distribution. Discussed about final year project/internship/industry internship. Involved project based learning in theory and lab courses. A & R department established Center for Automation Systems Engineering consultancy. All BOS documents should have page numbers. Briefing of Students achievements Participation of Student Team on Delta Robot exhibited at FIESTA-2018 in South Korea Student Participation in Robocon-2019 at Pune. Development of Basic version of Humanoid Robot under capstone project 	Review done and action planned	Dr. Dhanesh Manik, IIT Bombay. Mr. Abhijit Lele Robert Bosch Ind ia. Mr. Sachinkumar Gorlewar Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.
2.0 Curriculu m & Syllabus	 Review of Syllabi for III & IV Semester of the batch 2018- 22, KLE Tech. Suggested to Combine Machine Drawing and Manufacturing Lab. Course content related to Machine drawing and Manufacturing lab to be proposed and sent to external BOS members for approval. IP Protections can be included in Machine Drawing lab. Suggested changes in the course content of Microcontrollers to be proposed and sent to external 	Review done and action planned	Dr. Dhanesh Manik, IIT Bombay. Mr. Abhijit Lele Robert Bosch Ind ia. Mr. Sachinkumar Gorlewar Mr. Supreet Kamatagi,

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	BOS members for approval.		Griffyn Robotech
	 Reviewed and approved the course content of Kinematics and Dynamics of Machinery theory and Lab. Suggested changes in the course content of Real Time Embedded system to be proposed and sent to external BOS members for approval. Suggested to change the approach of delivery in the course of Real Time Embedded system. 		Pvt. Ltd.
3.0	 Review of Syllabi for V & VI Semester of the batch 2017- 21, KLE Tech. Object Oriented Programming & Database Management Systems 17EARC301 (50 hours): The course was newly created to support the previously offered OOP & Python Practice (16EARP305) and DBMS Practice (16EARP306). The new course included Java programming, Python programming and MySQL database. Overall, 50 hours of content was newly created. 	Review done and action planned	Dr. Dhanesh Manik, IIT Bombay. Mr. Abhijit Lele Robert Bosch Ind ia Mr. Sachinkumat Gorlewar Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.
4.0 M	 Summary of changes proposed in different courses Batch 2016-20, VII Sem Machine Learning and ROS 16EARE403 (40 hours) Topics related to Robot operating system[5 hours]: messages, classes, and servers[5 hours] were introduced and topics related to machine learning[5hours], computational learning theory[4hours], decision tree[4 hours], kernel methods[7 hours], reinforcement learning[5hours], and ANN[5 hours] were added. Measurement System 16EARE401 (40 hours) Measurement as an elective has been introduced for the academic year based on the inputs of the department committee and topics added areChapter1. Introduction to Measurement Systems (5 hrs), Chapter No. 2. Sensors and Signal conditioning (5 hrs), Chapter No. 3. Motion Measurement (5 hrs), Chapter No. 4. Force, Torque, and Shaft Power Measurement(5 hrs), Chapter No. 5. Pressure & 	Review done and action planned	Dr. Dhanesh Manik, IIT Bombay. Mr. Abhijit Lele Robert Bosch Ind ia Mr. Sachinkuma Gorlewar Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.

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Sound Measurement(5 hrs), Chapter No. 6. Flow and Temperature Measurement(5 hrs), Chapter No.7. Data Acquisition Systems(5 hrs), Chapter No. 8. Transmission and Recording of Data(5 hrs).

Batch 2017-21 , V Sem

Measurement System 17EARC304 (40 hours)

Chapter No. 1. Introduction to Measurement Systems (5 hrs), Chapter No. 2. Sensors and Signal conditioning (5 hrs), Chapter No. 3. Motion Measurement (5 hrs), Chapter No. 4. Force, Torque, and Shaft Power Measurement(5 hrs), Chapter No. 5. Pressure & Sound Measurement(5 hrs), Chapter No. 6. Flow and Temperature Measurement(5 hrs), Chapter No.7. Data Acquisition Systems(5 hrs), Chapter No. 8. Transmission and Recording of Data(5 hrs).

Mechatronics and Measurement Lab 17EARP303-12 hours Exercise on Sensors and Sensor Modeling-4 hrs, Exercise on Transfer Functions & Model based design- 4hrs, Exercise on System Identification and Parametrization :4hrs

Machine Learning & ROS 17EARC305 (40 hours)

Topics related to the Robotic operating system were added-ROS services, ROS messages, ROS publisher and subscriber and various simulation tools were added. Chapter 1:Introduction to Robot operating system [5hrs], Chapter 2:Messages, Classes and Servers in ROS[5hrs], Chapter 3: Introduction to machine learning [5hrs], Chapter 4: Computational learning theory and decision tree learning[8hrs], Chapter 5: Kernel methods and Graphical models[7hrs], Chapter **6:Reinforcement** Learning[5hrs], Chapter 7: Artificial neural network[5hrs]

Object Oriented Programming & Database Management Systems 17EARC301 (50 hours)

REGISTRAR REGISTRAR KLE Technological University The course was newly created to support the previously offered OOP & Python Practice (16EARP305) and DBMS Practice (16EARP306). The new course included Java programming, Python programming and MySQL database. Overall, 50 hours of content was newly created. Chapter 1: Introduction to Software Development Lifecycle and Unified Modeling Language (6 hrs), Chapter 2: Data Modeling using the ER Model (6 hrs), Chapter 3: Introduction to Object-

Dr. Dhanesh Manik, IIT Bombay.

Mr. Abhijit Lele Robert Bosch Ind ia

Mr. Sachinkumar Gorlewar

Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.



Oriented Programming - I (8 hrs), Chapter 4: Object-Oriented Programming - II (4 hrs), Chapter 5: Object-Oriented Programming - III (10 hrs), Chapter 6: Introduction to

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Database Management Systems (6 hrs), Chapter 7: Relational Data Model (5 hrs) and SQL and Chapter 8: Object-Relational Databases and Semantic Modeling Approach (5 hrs)

Mechatronics System Design 17EARC303 (20 hours) *

Introduced additional topics under : System Modeling : 5 hrs, Electric Drives- 10 hrs, Model based design of Systems and Identification and Case studies -5hrs

Object Oriented Programming & Database Management Systems Lab 17EARP301 (24 hours)

The lab was newly created to complement the new course on Object Oriented Programming & Database Management Systems (17EARC306). The lab focused on Java programming, Python programming and MySQL database with emphasis on industry relevant context. Overall, 7 experiments or 13 lab sessions were introduced.

Batch 2017-21, VI Sem

Al for Autonomous Robots 17EARE301 (40 hours)

Topics related robotics paradigms , robotic architectures-Hierarchical paradigm, reactive paradigm and deliberative paradigm ,animal models based algorithms, multi agents and navigation and localizations methods were added under the chapters- 1: Introduction to Artificial intelligence and autonomous systems [5hrs], Chapter 2: Robotic software architectures[5hrs], Chapter 3: Biological Foundations of the Reactive Paradigm, Chapter 4: Capturing intelligence Designing a reactive implementation with common sensing techniques for robotics perception[8hrs], Chapter 5: Multirobotics[7hrs],Chapter navigation in agents and 6:Localization and Map Making[6hrs], Chapter 7: Deep learning and natural language processing[4hrs]

Digital System Design and FPGA Programming 17EARE304 (40 hours) /

Chapter 1. Review of Logic Design Fundamentals: 9 hours, Chapter 2. Introduction to State Machine Charts and Dr. Dhanesh Manik, IIT Bombay.

Mr. Abhijit Lele Robert Bosch India

Mr. Sachinkumar Gorlewar

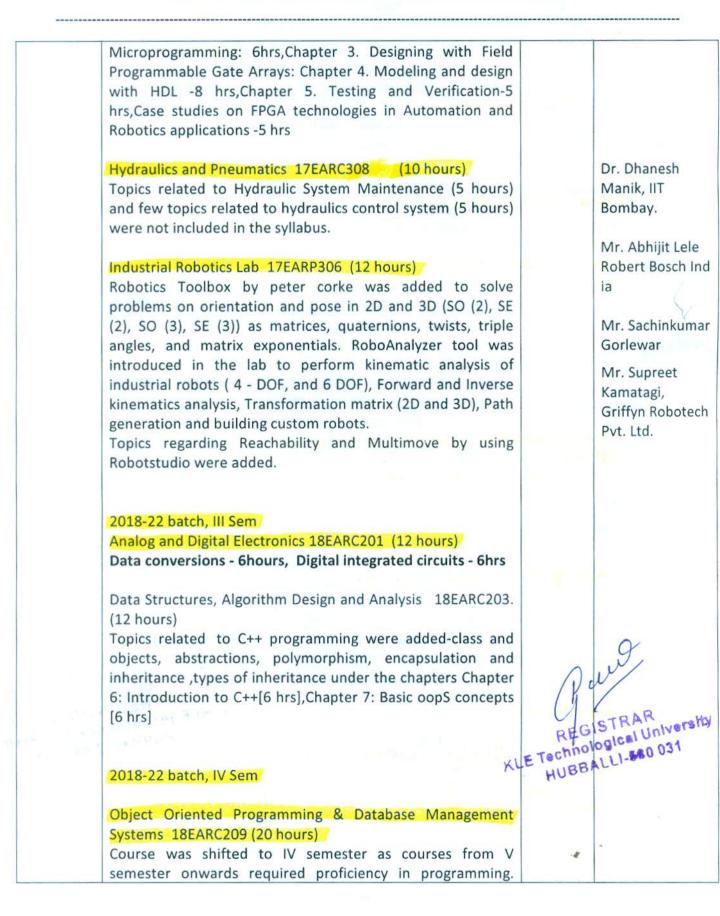
Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.

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Additionally, the number of programming languages were reduced with focus solely on classical OOP and databases. This required deletion of Chapter 5: Object Oriented Programming-III (10 hrs), Chapter 7: Relational Data Model and SQL (5 hrs) and Chapter 8: Object-Relational Databases and Semantic Modeling Approach (5 hrs). The deletion of some DBMS content was shifted to the lab with a more hands-on approach, and some to Chapter 5: Entity Relationship (ER) Model (3 hrs) and Chapter 6: Database Management System (2 hrs). Also, the content was adjusted to teach classical OOP instead of java specific, and introduced the concepts of cloud computing as part of Chapter 7: Cloud Computing (5 hrs).

Object Oriented Programming & Database ManagementSystemsLab18EARP209 (24hours)

Python related experiments and Java related experiments (3 labs or 6 hours) were adapted to work on experiments related to classical OOP. The lab experiments were enhanced to include additional experiments on classical OOP, file handling and user interfaces.

Microcontrollers Programming and Interfacing 18EARC208 (12 hours)

Exposure to advanced microcontrollers [2 hours], the topics related to STmicroelectronics microcontrollers [5 hours] and programming using timers and interrupts [5 hours] were added.

Control Systems 18EARC207 (12 hours)

Root Locus: Incorporation of Performance Specifications in Controller Design, Analysis of Steady State Errors, Root Locus and its Application in Control Design. (3 hrs), Case Studies of control systems were introduced. Some important case studies are on Plants for Pressure Control, Electromechanical Plants, Modeling and design of Inverted Pendulum, Modeling and design of Aircraft. (5 hrs)

Controllers – Proportional (P), Integral (I) and Derivative (D) Blocks, Examples of PID controller design, Problems. (4 hrs)

Microcontrollers Programming and Interfacing Lab 18EARP208 SD (8 hours) Dr. Dhanesh Manik, IIT Bombay.

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> Mr. Abhijit Lele Robert Bosch Ind ia

> Mr. Sachinkumar Gorlewar

Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.

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Experiments related to development of IOT systems[3 hours], interrupt programming with STM MCU [2 hours], and development of applications using STM MCU to predict the data using the existing trained module[3 hours] were introduced.

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REGISTRAR KLE Technological University HUBBALLI-580 031



Changes made in Curriculum Content for III and IV Semester of batch 2018-22, IV & V Semester of the batch 2017-21, VII & VIII Semester of the batch 2016-20, in IV BOS held in Mechanical Library on 13th April 2019.

Approved by:

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A & R Dept.	Auto
2	Dr. Dhanesh Manik, IIT Bombay.	Dham Mani
3	Mr. Abhijit Lele, Robert Bosch India.	A.M.Iele
4	Mr. Sachinkumar Gorlewar, Griffyn Robotech Pvt. Ltd.	
5	Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	Gendy
6	Mrs. Jyoti Bali, A & R Dept.	Istali
7	Mr. Vinod Kumar V Meti, A & R Dept.	Jul val
8	Mr. Nagaraj M B, A & R Dept.	NOT
9	Mr. Sachin Karadgi, A & R Dept.	Sachanok



Resolutions Made During the 4th Board of Studies Meeting held on 13th April 2019 in Mechanical Library.

- 1. Resolved to approve Syllabi for III and IV Semester of batch 2018-22, KLE Tech., as per the changes suggested by external and internal members.
- 2. Resolved to approve Syllabi for V & VI Semester of the batch 2017-21, KLE Tech., as per the changes suggested by external and internal members.
- 3. Resolved to approve Syllabi for VII & VIII Semester of the batch 2016-20, KLE Tech., as per the changes suggested by external and internal members.

Changes made in the Curriculum Content for III and IV Semester of the batch 2018-22, V & VI Semester of the batch 2017-21, VII & VIII Semester of the batch 2016-20, in 4th BOS held in Mechanical Library on 13th April 2019.

The suggested changes in the content of all the courses and laboratories discussed in the BOS meeting are attached with this document.

Approved by:

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A & R Dept.	July .
2	Dr. Dhanesh Manik, IIT Bombay.	A.M. lele.
3	Mr. Abhijit Lele, Robert Bosch India.	A.M.lele.
4	Mr. Sachinkumar Gorlewar, Griffyn Robotech Pvt. Ltd.	Bar
5	Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	Gordel Tabali
6	Mrs. Jyoti Bali, A & R Dept.	Isbali
7	Mr. Vinod Kumar V Meti, A & R Dept.	Seried .
8	Mr. Nagaraj M B, A & R Dept.	MED 7
9	Mr. Sachin Karadgi, A & R Dept.	Sachon R.



KLE Society's KLE Technological University DEPARTMENT OF AUTOMATION & ROBOTICS

Department of Automation & Robotics Structure of Board of Studies 2019-20, 13th April 2019

S. No.	Category	Nomination of the Committee	TRUCK	Name of the Person	Signature
1	Concerned Head of the Department/ School/ Center	Chairperson	1	Arunkumar C Giriyapur	1º
2	ONE Professor, ONE Associate Professor and ONE Assistant	Members		Mrs Jyoti Bali	The
	Professor from the Department/ School/ Center, nominated by			Mr. Vinod Kumar V Meti	Bud
	the Dean Academic Affairs			Mr. Nagaraj.M.B	NOT
				Mr.Sachin Karadgi	Sachurte
3	ONE PG Coordinator for each of the PG programmes offered by	Member(s)	1		
	the Department/ School/ Center		2		1
3	TWO Subject experts from outside the college nominated by	Members	1	Dr. Dhanesh Manik, IIT Bombay.	Phasen pai
	the Vice-Chancellor		2		
4	TWO representative from industry corporate sector/ allied		1	Mr. Abhijit Lele, Robert Bosch India.	A.M.lele
	area relating to placement nominated by the Vice- Chancellor	Members	2	Mr. Sachinkumar Gorlewar, Griffyn Robotech Pvt. Ltd.	1 Alexandre
5	ONE Post-graduate meritorious alumnus nominated by the Vice- Chancellor	Member	1	Mr. Supreet Kamatagi	Grandin
6	ONE Student Member representing each of the program	Invited Member	1	UG Student (Not Applicable at present)	
	offered by the Department/ School/ Center		2	PG Student (Not Applicable at present)	
			3	PhD Student (Not Applicable at present)	

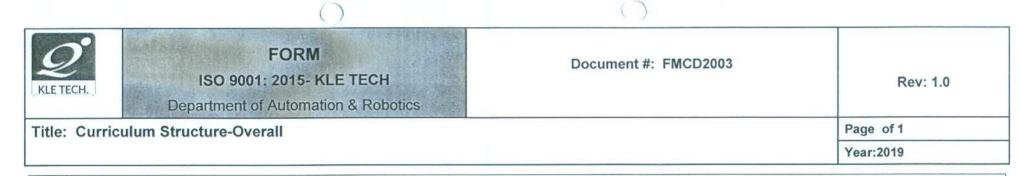
The concerned Chairman of Board of Studies may invite additional experts to the Departmental Board of Studies as deemed fit.

A Departmental Board of Studies shall:

Meet at least once a year, sufficiently before the commencement;

Prepare detailed curricula and syllabi of concerned Programmes and submit to the Academic Council for approval and publication; and

Revise the curricula and syllabi from time to time and submit to the Academic Council for approval and publication



	III	IV	V	VI	VII	VIII
	Statistics And Integral Transforms	Numerical Methods and Partial differential equations	Robot analysis & design	Realtime Embedded Systems	Industrial Data Networks	Department Elective-6
	Calculus And Integral Transforms	Vector calculus and differential	Mechatronics System Design	Programming Industrial Automation Systems	Department Elective-3	Open Elective
	Analog & Digital Electronic Circuits	Kinematics Of Machinery	Microcontrollers	Department Elective-1	Department Elective-4	Project
	Mechanics Of Materials	Control Systems	Artificial Intelligence & Machine Learning	Department Elective-2	Department Elective-5	Internship
WITH COURSE	Algorithm Analysis And Program Design	Machine Design	Hydraulics & Pneumatics	PA & LR	Open Elective	Industry Internship - Project Work
	Manufacturing Technology	Measurement systems	Microcontroller Lab	Automation Lab	CIPE	
	Analog And Digital Electronic Lab	Object Oriented System Design	Robotics Lab	Hydraulics And Pneumatics Lab		
	Machine Drawing & Manufacturing Technology Lab	OOSD Lab	Mechatronics & Measurements Lab	Realtime Embedded Systems Lab		
		Kinematics Lab	Mini Project (Engineering Design Practice)	Minor project		

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Approved by (Use Initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
Signature	Dharan Maii	A.M.ILLE	8	Grande		John	31.	NED	Sachant

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	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2003	Rev: 1.0		
itle: Curric	tle: Curriculum Structure-Overall				
			Year:2019		

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III	IV	V	VI	VII	VIII
Statistics And Integral Transforms	Numerical Methods and Partial differential equations	Robot analysis & design	Hydraulics & Pneumatics	Industrial Data Networks	Department Elective-6
Calculus And Integral Transforms	Vector calculus and differential	Mechatronics System Design	Realtime Embedded Systems	Department Elective -3	Open Elective
Analog & Digital Electronic Circuits	Kinematics Of Machinery	Programming Industrial Automation Systems	Department Elective -1	Department Elective -4	Project
Mechanics Of Materials	Microcontrollers	Robotics Lab	Department Elective -2	Department Elective -5	Internship
Algorithm Analysis And Program Design	Control Systems	Mechatronics & Measurement Lab	Hydraulics And Pneumatics Lab	Open Elective	Industry Internship - Project Work
Machine Design	Manufacturing Technology	Automation Lab	Realtime Embedded Systems Lab	CIPE	
Analog And Digital Electronic Circuits Lab	Manufacturing & Metrology lab	Measurements	Artificial Intelligence & Machine Learning		
Machine Drawing Lab	Kinematics Lab	Object Oriented System Design	Minor project		
Programming Lab	Microcontroller Lab	OOSD Lab	PA & LR		
		Engineering Design (Mini project)		1	

Approved by (Use Initials) DI	OR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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Q. KLE TECH.	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2003	Rev: 1.0
Title: Curricu	Ilum Structure-Overall		Page of 1
			Year:2019

III	IV	V	VI	VII	VIII
Statistics and integral transforms	Numerical Methods and partial differential equations	Robot analysis & design	Hydraulics & Pneumatics	Industrial Data Networks	Department Elective -6
Calculus and integral transforms	Vector calculus and differential				
Analog & Digital Electronic circuits	Kinematics of Machinery	Mechatronics System Design	Real Time Embedded Systems	Department Elective -3	Open Elective
Mechanics of Materials	Microcontrollers	Programming Industrial Automation Systems	Department Elective -1	Department Elective -4	Project
Manufacturing Technology	Machine Design	Robotics Lab	Department Elective -2	Department Elective -5	Internship
Algorithm analysis & program design	Control systems	Mechatronics Lab	Hydraulics & Pneumatics Lab	Open Elective	Industry Internship Project Work
Engineering Design	Manufacturing & Metrology lab	Automation Lab	Real Time Embedded Systems Lab	CIPE	
Analog & Digital electronics lab	Kinematics lab	OOP & Python Practice	Minor project		
Programming Lab	Microcontroller Lab	DBMS Practice	PA & LR		
	Product Realization	Mini project			

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Signature Proton top AMilele the Renald I Tisken with All I have	Appróved by (Use Initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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C KLE TECH.	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2007	Rev: 1.0
Title: Verification-Curric	llum Design and Development		Page: of 1
016- 20 Batch			Year:2019

Sr.No	Agenda		Inputs from members		Decisions			Verific	ation status	
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Verified	by(Use Initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur Jyoti Bali	Vinod Meti Naș	garaj MB	Sachin Ka	radgi
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Title: Verification-		Page: of 1	
017-21 Batch			Year:2019

Sr.No	Agenda	Inputs from members	Decisions	Verifie	cation status	
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c	Reference books	Added for text book	1.1		V	
d	Evaluation method	Verified	found Ok.		V	

Verified by(Use Initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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2 TECH.	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2007	2007 Rev: 1.0
e: Verification-Cu	rriculum Design and Development		Page: of 1
18-22 Batch			Year:2019

Sr.No	Agenda		Inputs from members		Decisions				Verifi	cation status	
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Q KLE TECH.	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2006	Rev: 1.0
Review-Cur	riculum Design and Development		Page 1 of 1
			Year:

Semester: VII (2016-20 batch)

Date of Review: 13-04-2019

Inputs for review: PEO- Mapping of CLO with PO – Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed	Status of Review					
		Accepted	Accepted with minor changes	Not accepted			
01	Overall schemes of the program						
а	Credits		V				
b	Flow		V				
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02	Semester wise curriculum structure						
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с	Contact hours		\checkmark				
d	Evaluation scheme	V					
03	Course contents			4.5			
а	Subject contents	And a second	V	2			
b	Unitization		\sim				
с	Reference books		V ·				
d	Evaluation method		V				

Changes	Suggested (Serial number wise)
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	stors, verbid after charges.
2	Added Refuerce books for some subjects the
	pressurence stor.
3.	Review of electric subjects done and ouggested
	ne dificilles
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Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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Review-Cu	riculum Design and Development		Page 1 of 1
			Year:

Semester: VIII (2016-20 batch)

Date of Review: 13-04-2019

Inputs for review: PEO- Mapping of CLO with PO - Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed	Status of Review					
		Accepted	Accepted with minor changes	Not accepted			
01	Overall schemes of the program	- State Balling					
а	Credits		V				
b	Flow		V				
с	Contact hours		V				
02	Semester wise curriculum structure						
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С	Contact hours		V				
d	Evaluation scheme	V					
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b	Unitization		Ň.				
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d	Evaluation method						

Changes Suggested (Serial number wise) Marefaching Computer Inlegial il iel syll hee a Jackach book the se cel rescribed d 2) 00 Nei 6006, en Id OP 0

Reviewed by	DR.	Mr. Abhijit	Mr.	Supreet	A.C.Giriyapur	Jyoti	Vinod	Nagaraj	Sachin
(Use initials)	Dhanesh Manik	Lele	Sachinkumar	Kamatagi		Bali	Meti	MB	Karadgi
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Q. KLE TECH.	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2006	Rev: 1.0
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			Year:

Semester: V (2017-21 batch)

Date of Review: 13-04-2019

Inputs for review: PEO- Mapping of CLO with PO - Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed		Status of Review	
		Accepted	Accepted with minor changes	Not accepted
01	Overall schemes of the program			
а	Credits		V	
b	Flow		V	
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03	Course contents			
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b	Unitization			
С	Reference books		V	
d	Evaluation method			

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	MSD.	
2.	Changes in the delivery of Robo	his dab. suggest
3.	Change purposed in Meanmenth M	echaticies had
	O coast	

Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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Q KLE TECH.	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2006	Rev: 1.0
Review-Cur	riculum Design and Development		Page 1 of 1
			Year:

Semester: VI (2017-21 batch)

Date of Review: 13-04-2019

Inputs for review: PEO- Mapping of CLO with PO - Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed	Status of Review					
		Accepted	Accepted with minor changes	Not accepted			
01	Overall schemes of the program						
а	Credits		\checkmark				
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С	Contact hours		V				
02	Semester wise curriculum structure						
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с	Contact hours						
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Changes Suggested (Serial number wise) conteri d Arphie D word course 1) in 0 Lachien harry in course 2) to charge the as 100 tra conteil prescribed ashh b cil the Su -SI eti as Corre ōV 01 C 01

Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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			Year:

Semester: III (2018-22 batch)

Date of Review:13-04-2019

Inputs for review: PEO- Mapping of CLO with PO - Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed	Status of Review				
		Accepted	Accepted with minor changes	Not accepted		
01	Overall schemes of the program					
а	Credits		\checkmark			
b	Flow	-	V			
с	Contact hours		V			
02	Semester wise curriculum structure					
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d	Evaluation method	V				

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3.	Reviewed the issue syllabur of Kinematics of
ч.	Ormanics of Marchnery of append. changes in the deliney of RTES appound.

Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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			Year:

Semester: IV (2018-22 batch)

Date of Review:13-04-2019

Inputs for review: PEO- Mapping of CLO with PO - Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed		Status of Review	
		Accepted	Accepted with minor changes	Not accepted
01	Overall schemes of the program			
a	Credits		~	
b	Flow			
с	Contact hours			
02	Semester wise curriculum structure			
а	Credits		\checkmark	
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с	Contact hours			
d	Evaluation scheme	\checkmark		
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1.	Reviewed the course content of Microcontrollee
	and Real fine Embedded Systems.
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2.	Emphasis on care study discussion was Strossed
	my enternal meanheas

Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Sachinkumar	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB	Sachin Karadgi
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3rd June 2020

Agenda

Sl.No	Points to discuss	Documents	
1.	Introduction & Review of Actions initiated from previous BOS meeting		
2.	Review of modifications recommended by the Academic Council after BOS 2019.		
3.	Review and approval of Syllabi for VII & VIII Semester of the batch 2017-21 , KLE Tech.	Curriculum structur & Syllabus	
4.	Review and approval of Syllabi for V & VI Semester of the batch 2018-22 , KLE Tech.	G Synabus	
5.	Review and approval of Syllabi for III & IV Semester of the batch 2019-23 , KLE Tech.		
6.	Other points		

Minutes Prepared by

Dr. Jyoti Bali

Prof. A. C. Giriyapur

Chairperson, HOD, A&R

REGISTRAR KLE Technological University HUBBALLI-580 031



SI.No	Points raised	Changes made	Raised By	
1.0	 HOD welcomed the members of fifth meeting of Board of Studies-2020 (BOS-2020) for KLE Technological University. Reviewed the verticals of the department. Reviewed the minutes of BOS 2019. Discussed about final year project/internship/industry internship. HOD discussed about the activities of Center for Automation Systems Engineering consultancy, at A & R department. 	Review done and action proposed	Dr. Dhanesh Manik, IIT Bombay. Mr. Jitendra Kataria, Beckhof Automation Indi Ltd.Pune Mr. Supreet	
2.0	 Review of modifications recommended by the Academic Council or the Principal after BOS 2019. Reviewed the curriculum structure and credit distribution. 		Kamatagi, Griffyn Robotec Pvt. Ltd.	
3.0 Curriculum & Syllabus for batch 2017-21 REGISTR REGISTR	 Review of Syllabi for VII & VIII Semester of the batch 2017-21, KLE Tech As per the feedback from Academic council and BOS 2019, the changes made in the syllabus were proposed and presented. Discussion on the electives prescribed in the syllabus was done and got inputs from the members. HOD discussed about the capstone projects namely, Humanoid Robot, Ajit 2.0, Digital Twin and Automatic Storage and Retrieval System (ASRS). HOD discussed about Autonomous Car project under Institutional Research Project(IRP) scheme with NVIDIA hardware platforms having high performance computing ability with Al solutions Proposed the introduction of Project work titled Project 1, 18EARW401 prescribed for 144 Hours. Decision taken in the Pre-BOS meeting to add one more project activity in VII semester for improving complex problem solving skills for students opting Univer for internship program in VIII semester. 	Review done and action proposed	Dr. Dhanesh Manik, IIT Bombay. Mr. Jitendra Kataria, Beckhoff Automation India Ltd.Pune Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	



3.0 Curriculum & Syllabus for batch 2018-22	 Review of Syllabi for V & VI Semester of the batch 2018-22, KLE Tech. No major changes suggested in the V semester syllabus prescribed. Mrs. Ashwini, Asst. Professor, A&R Dept. shared the experience in handling the subject Machine Learning & Robot Operating System(ROS), for the current semester. The subject content and the hands on practices were reviewed by members. Reviewed the syllabus of AI for Autonomous Systems and got approval of BOS members No major changes suggested in the VI semester syllabus. 		Dr. Dhanesh Manik, IIT Bombay. Mr. Jitendra Kataria, Beckhoff Automation India Ltd.Pune Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	
4.0	 Review and approval of Syllabi for III & IV Semester of the batch 2019-23, KLE Tech. No major changes introduced in the syllabus and get it approved 	Review done		
5.0 Other Points (Research related)	 HOD presented the proposal for grooming research culture in the department. The research groups were presented in the area of Smart manufacturing and Cognitive Robotics. The views of all members on selection of research areas were welcomed. The members urged the need for team based efforts in research process. They expressed the need for involving faculty in industrial projects. The BOS members also insisted that the up gradation of project solution should happen from one batch to the next, to transfer knowledge from senior batch to the junior batches. 		Dr. Dhanesh Manik, IIT Bombay. Mr. Jitendra Kataria, Beckhoff Automation India Ltd.Pune Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	

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Changes made in Curriculum Content for III and IV Semester of batch 2019-22, IV & V Semester of the batch 2018-22, VII & VIII Semester of the batch 2017-21, in V BOS held as Virtual Google Meet 3rd June 2020.

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A & R Dept.	PRESENT
2	Dr. Dhanesh Manik, IIT Bombay.	PRESENT
3	Mr. Abhijit Lele, Robert Bosch India.	ABSENT
4	Mr. Jitendra Kataria, Beckhoff Automation India . Ltd. Pune	PRESENT
5	Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	PRESENT
6	Dr. Jyoti Bali, A & R Dept.	PRESENT
7	Dr. Vinod Kumar V Meti, A & R Dept.	PRESENT
8	Dr. Sachin Karadgi, A & R Dept.	PRESENT
9	Mr. Nagaraj M B, A & R Dept.	PRESENT

REGISTRAR KLE Technological University HUBBALLI-580 031



Resolutions Made During the 5th Board of Studies Meeting held on 3rd June 2020 as

 Resolved to approve Syllabi for III and IV Semester of batch 2019-23, KLE Tech., as per the changes suggested by external and internal members.

Creating Value veraging Knowledge

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- Resolved to approve Syllabi for V & VI Semester of the batch 2018-22, KLE Tech., as per the changes suggested by external and internal members.
- Resolved to approve Syllabi for VII & VIII Semester of the batch 2017-21, KLE Tech., as per the changes suggested by external and internal members.
- Changes made in the Curriculum Content for III and IV Semester of the batch 2019-23, V
 & VI Semester of the batch 2018-22, VII & VIII Semester of the batch 2017-21, in 5th BOS held in Mechanical Library on 3rd June 2020.
- The suggested changes in the content of all the courses and laboratories discussed in the BOS meeting are attached with this document.

l No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A & R Dept.	PRESENT
2	Dr. Dhanesh Manik, IIT Bombay.	PRESENT
3	Mr. Abhijit Lele, Robert Bosch India.	ABSENT
4	Mr. Jitendra Kataria, Beckhoff Automation India . Ltd. Pune	PRESENT
5	Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	PRESENT
6	Mrs. Jyoti Bali, A & R Dept.	PRESENT
7	Mr. Vinod Kumar V Meti, A & R Dept.	PRESENT
8	Mr. Nagaraj M B, A & R Dept.	PRESENT
9	Mr. Sachin Karadgi, A & R Dept.	PRESENT

KLE Technological University HUBBALLI-580 031



KLE Society's KLE Technological University DEPARTMENT OF AUTOMATION & ROBOTICS

Department of Automation & Robotics Structure of Board of Studies 2020-21, 03th June 2020

S. No.	Category	Nomination of the Committee		Name of the Person	Signature
1	Concerned Head of the Department/ School/ Center	Chairperson	1	Arunkumar C Giriyapur	Present
2	ONE Professor, ONE Associate Professor and ONE Assistant	Members		Dr. Jyoti Bali	Present
	Professor from the Department/			Dr. Vinod Kumar V Meti	Present
	School/ Center, nominated by the Dean Academic Affairs		-	Dr. Sachin Karadgi	Present
				Mr. Nagaraj.M.B	Present
3	ONE PG Coordinator for each of the PG programmes offered	Member(s)	1	NILŁ	
	by the Department/ School/ Center	2		NILL	6
3	TWO Subject experts from outside the college nominated by the Vice-Chancellor	Members	1	Dr. Dhanesh Manik, IIT Bombay.	Present
4	TWO representative from industry corporate sector/ allied area relating to placement	Members	1	Mr. Jitendra Kataria, Beckhoff Automation India Ltd.Pune	Present
	nominated by the Vice- Chancellor		2		
5	ONE Post-graduate meritorious alumnus nominated by the Vice-Chancellor	Member	1	Mr. Supreet Kamatagi	Present
6	ONE Student Member representing each of the	Invited Member	1	UG Student (Not Applicable at present)	
	program offered by the		2	PG Student (Not	
	Department/ School/ Center		-	Applicable at present)	
			3	PhD Student (Not Applicable at present)	

The concerned Chairman of Board of Studies may invite additional experts to the Departmental Board of Studies as deemed fit.

A Departmental Board of Studies shall:

Meet at least once a year, sufficiently before the commencement;

Prepare detailed curricula and syllabi of concerned Programmes and submit to the Academic Council for approval and publication; and

Revise the curricula and syllabi from time to time and submit to the Academic Council for approval and publication

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Review-C	Page 1 of 1		
			Year:

Semester: III & IV (2019-23 batch)

Date of Review: 03-06-2020

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Inputs for review: PEO- Mapping of CLO with PO - Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed		Status of Review					
		Accepted	Accepted with minor changes	Not accepted				
01	Overall schemes of the program							
а	Credits							
b	Flow	~						
С	Contact hours	V						
02	Semester wise curriculum structure			建设主				
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b	Flow							
с	Contact hours	V						
d	Evaluation scheme	V						
03	Course contents		- Contraction	* 4 * 4				
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d	Evaluation method							

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Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Jitendra Kataria	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB
Signature	Virtually present	Absent	Virtually present	Virtually present	V.	As buch	991.00	NE

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Review-Curriculum Design and Development

Year:

Semester: V & VI (2018-22 batch)

Date of Review: 03-06-2020

Inputs for review: PEO- Mapping of CLO with PO – Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed	Status of Review					
		Accepted	Accepted with minor changes	Not accepted			
01	Overall schemes of the program						
а	Credits						
b	Flow	1					
с	Contact hours	~					
02	Semester wise curriculum structure						
а	Credits	L					
b	Flow	~					
с	Contact hours	/					
d	Evaluation scheme	~					
03	Course contents						
а	Subject contents	~					
b	Unitization	~					
с	Reference books	V		-			
d	Evaluation method	V					

No major changes in the I servester syllabres
suggisted.
Reviewed in specific the syllabus of Machine
hearing + Ros and also In hands on practic

Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Jitendra Kataria	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB
Signature	Virtually present	Absent	Virtually present	Virtually present	Je.	John	Danel .	NDA J

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Q KLE TECH.	FORM ISO 9001: 2015- KLE TECH Department of Automation & Robotics	Document #: FMCD2006	Rev: 1.0
Review-Cu	rriculum Design and Development		Page 1 of 1
			Year:

Semester: VII & VIII (2017-21 batch)

Date of Review: 03-06-2020

đ.

Inputs for review: PEO- Mapping of CLO with PO - Academic Guidelines-Previous review outcomes

Sr.No	Features reviewed	Status of Review							
		Accepted	Accepted with minor changes	Not accepted					
01	Overall schemes of the program								
а	Credits	~							
b	Flow								
с	Contact hours	-							
02	Semester wise curriculum structure			PE 3 2 4					
а	Credits	r							
b	Flow								
с	Contact hours	~							
d	Evaluation scheme	2							
03	Course contents								
а	Subject contents	~							
b	Unitization								
с	Reference books	1							
d	Evaluation method								

s Suggested (Serial number wise)
As mi the feedback from Academic Council and
As pi the feddback from Academic Council and Bos 2019, syllames charges made are proposed
 Discussion on the electives prescribed done and
 Discussion on the electives prescribed done and Syllabus presented and got it appeared

Reviewed by (Use initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Jitendra Kataria	Supreet Kamatagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB
Signature	Virtually present	Absent	Virtually present	Virtually present	· ////	truch	Real	ND

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Semester 2018-22 Batch

	III		IV		V		VI		VII		VIII
	STATISTICS AND INTEGRAL TRANSFORMS CALCULUS AND INTEGRAL TRANSFORMS		vector calculus and differential 1 equations 1 Manufacturing & Metrology lab 1 Machine Design 1 Control Systems 1 Microcontrollers Programming & 1		Mini Project		Computer Vision & Digital Image Processing		e Processing		Department Elective-
					NUMERICAL METHODS AND STATISTICSReal Time Embedded SystemsMachine Learning & ROSPower Electronics Motors and DrivesProgramming Industrial Automation SystemsHydraulics And Pneumatics LabReal time Embedded SystemsReal Time Embedded Systems LabMechatronics System DesignPA & LR		Real Tir	ne Embedded Systems			Internship Training
Analog & Di		& Digital Electronic Circuits						Design of automatic machinery		Industry Internship Project Work	
	Kinematics Of Machinery Data Stucture Algorithm Design and Analysis Mechanics Of Materials						Ad		Advanced Mi	icrocontroller	Project
							Project-1				
8								PA & LR		PE	
	Manufa	cturing Technology	Object Oriented Program DBMS	nming &	Measurement	Systems	Hydr	aulics & Pneumatics			
	Analog	& Digital Electronic Circuits Lab	Robot Analysis & Desig	ņ	Machine Lean Lab	ning & ROS	Al for	Autonomous Robots			
	Kinema	tics Of Machinery lab	Microcontrollers Progra Interfacing Lab	mming &	Programming Automation S			al System Design & GA Programming			
			Object Oriented Program	nming &	Industrial Rob		Indu	istrial Robotics Lab			
1	Machin	e Drawing Lab	DBMS Lab		Minor Project						
prove se Ini	ed by tials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Jite	endra Kataria	Supreet Kan	natagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj MB
ignat	ure	Virtually present	Absent	Virtually	y present	Virtually pres	sent		15 Bali	Que	NDO

Title: Curriculum Structure- Overall



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XXX		IV		V		10		VII		VIII	
III		IV		×		VI		VII		VIII	
STATISTICS AND INTEGRAL TRANSFORMSnumerical methods and partial differential equationsCALCULUS AND INTEGRAL TRANSFORMSvector calculus and differential equationsAnalog & Digital Electronic CircuitsManufacturing & Metrology labKinematics Of MachineryMachine Design					Mini Project		ter Vision & Digital age Processing	Industrial Data Networks		Department Elec	
		ntial	AND STATISTICS		Real Time Embedded Systems		Mobile robotics & Perception		Internship Trai		
					Power El	ectronics Motors and Drives	Design of automatic machinery Advanced Microcontroller		Industry Interns Project Wor		
					Hydraul	lics And Pneumatics Lab			Project		
Data St Analys	tucture Algorithm Design and sis	Control Systems Microcontrollers Programming & Interfacing		Real time Embedded Systems Mechatronics System Design		Real Tim	e Embedded Systems Lab	Project-1 CIPE			
Mecha	nics Of Materials						PA & LR				
Manuf	acturing Technology	Object Oriented Programm DBMS	ning &	Measurement	Systems	Hydra	ulics & Pneumatics				
Analog	g & Digital Electronic Circuits Lab	Robot Analysis & Design		Machine Lear Lab	ning & ROS	AI for a	Autonomous Robots				
Kinem	atics Of Machinery lab	Microcontrollers Programm Interfacing Lab	ming &	Programming Automation S			l System Design & 3A Programming				
Machin	ne Drawing Lab	Object Oriented Programm DBMS Lab	ning &	Industrial Rob Minor Project		Indus	trial Robotics Lab				
oved by Initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Jite	endra Kataria	Supreet Kam	natagi	A.C.Giriyapur	Jyoti Bali	Vinod Meti	Nagaraj I	
nature	Virtually present	Absent	Virtually	y present	Virtually pres	ent	19	Isber	O.od	MAN	

Title: Curriculum Structure- Overall

	Creating	echnological niversity Value inowledge		ORM 2008- BVBC utomation 8		5		Docume	ent # : FMCD2003			Rev:1.0
				Title:	Curriculum S	structure- Overall					Pag	
											Yea	r:2020
	Semester	2017-21 Batch										
	Ш		IV		V	_	VI		VII		VIII	
with course code	STATISTICS AND INTEGRAL TRANSFORMS CALCULUS AND INTEGRAL TRANSFORMS Analog & Digital Electronic Circuits		numerical method differential ed			RICAL METHODS D STATISTICS	Computer Visio Image Pro		Industrial Data Networks		Depa	tment Elective-6
			vector calculus and differential equations		Object Oriented Programming and Data base management systems		Real Time Embe	dded Systems	Mobile robotics & Perception		Inte	rnship Training
			Manufacturing 7	Manufacturing Technology		0		er Electronics Motors and Drives Design of automatic machinery		ic machinery	Industry	Internship -Projec Work
	Mechanics Of Materials		Manufacturing & Metrology lab		Mechatronics System Design		Hydraulics And P	neumatics Lab	Advanced Micro	ocontroller		Project
	Algorithm Analysis And Program Design		Kinematics of Machinery		Measurement Systems		Real Time Embe Lab		Project-1			
with o	Machine Design		Microcontrollers		Machin	ne Learning & ROS	PA &	LR	CIPE			
Course	Analog And Digital Electronic Circuits Lab		Control Systems		Robot analysis & design		Hydraulics &	Pneumatics				s
	Machine Drawing Lab Programming Lab		Kinematic	s Lab		iented Programing and management systems Lab	AI for Autonomous Robots					
*			Microcontroller Lab		Programming Industrial Automation Systems Lab		Digital System Design & FPGA Programming					
				Mech		bnics & Measurement Lab	Industrial Robotics Lab					
						Mini project	Minor P	roject				
	roved by Initials)	DR. Dhanesh Manik	Mr. Abhijit Lele	Mr. Jitend	ra Kataria	Supreet Kamat	agi A.C.Gi	riyapur	Jyoti Bali	Vinod	Meti	Nagaraj MB
Sig	nature	Virtually present	Absent	Virtually pre	sent	Virtually present	A	9	JSKul	Ci a	à	NA

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Changes made in Curriculum Content for III and IV Semester of batch 2019-22, IV & V Semester of the batch 2018-22, VII & VIII Semester of the batch 2017-21, in Vth BOS meeting held as Virtual Google Meet 3rd June 2020.

SI. No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A & R Dept.	
2	Dr. Dhanesh Manik, IIT Bombay.	Online Preserve
3	Mr. Abhijit Lele, Robert Bosch India.	ABSENT
4	Mr. Jitendra Kataria, Beckhoff Automation India . Ltd. Pune	Ontère Prosena
5	Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	On-time Presence
6	Dr. Jyoti Bali, A & R Dept.	JSBale
7	Dr. Vinod Kumar V Meti, A & R Dept.	Wind
8	Dr. Sachin Karadgi, A & R Dept.	Sachrook.
9	Mr. Nagaraj M B, A & R Dept.	NADET



Resolutions Made During the 5th Board of Studies Meeting held on 3rd June 2020:

- Resolved to approve Syllabi for III and IV Semester of batch 2019-23, KLE Tech., as per the changes suggested by external and internal members.
- Resolved to approve Syllabi for V & VI Semester of the batch 2018-22, KLE Tech., as per the changes suggested by external and internal members.
- Resolved to approve Syllabi for VII & VIII Semester of the batch 2017-21, KLE Tech., as per the changes suggested by external and internal members.
- The suggested changes in the content of all the courses and laboratories discussed in the BOS meeting are attached with this document.

SI No	Members, BOS	Signature
1	Prof. A. C. Giriyapur, Chairperson, HOD, A & R Dept.	Jul
2	Dr. Dhanesh Manik, IIT Bombay.	Online Presence
3	Mr. Abhijit Lele, Robert Bosch India.	ABSENT
4	Mr. Jitendra Kataria, Beckhoff Automation India . Ltd. Pune	Online Presence
5	Mr. Supreet Kamatagi, Griffyn Robotech Pvt. Ltd.	Online Prisence
6	Dr. Jyoti Bali, A & R Dept.	J-S Kali
7	Dr. Vinod Kumar V Meti, A & R Dept.	Que al
8	Dr. Sachin Karadgi, A & R Dept.	Sachash.
9	Mr. Nagaraj M B, A & R Dept.	NTAR