

CHRIST (Deemed to be University)
School of Engineering and Technology
Department of Mechanical and Automobile Engineering
Department Best Practices
Academic Year 2023-24

Industry Collaboration for Skill enhancement

- **Daimler truck innovation center India (DTICI), Bangalore**
- **GTTC (Government Tool Room and Training Center), Bangalore**
- **Wipro 3D, Bangalore**

Collaboration between educational institutions and industries is crucial for enhancing skills and preparing students for the workforce. This partnership benefits both parties by ensuring that education remains relevant to the demands of the job market.

1. Curriculum Development:

Industry Input: Industries can provide insights into the skills and knowledge that are currently in demand. They can help educational institutions tailor their curricula to match industry needs.
Guest Lectures and Workshops: Industry professionals can conduct lectures and workshops, offering real-world perspectives and practical insights to students.

2. Internships Programs:

Hands-on Experience: Internships and cooperative education programs allow students to gain practical experience in real workplace settings.

Skill Application: Students can apply theoretical knowledge, enhancing their skills under the guidance of industry experts.

3. Research Collaborations:

Applied Research: Collaborative research projects with industries can address real-world challenges, providing students with opportunities to apply their skills to practical problems.

Innovation: Industries often have specific problems that can be solved through innovative research. Students can contribute fresh perspectives and ideas.

4. Industry-Designed Training Programs:

Custom Training: Industries can design specialized training programs tailored to their specific needs. These programs can focus on the latest technologies and techniques relevant to the industry.

Certifications: Industry-recognized certifications obtained through such programs can significantly enhance students' employability.

5. Collaborative Projects:

Teamwork: Joint projects involving students and industry partners promote teamwork and collaboration skills.

Problem-Solving: Students can work on real problems faced by industries, honing their problem-solving abilities.

6. Continuous Feedback Loop:

Regular Updates: Industries can provide feedback on the performance of graduates in the workplace, helping educational institutions to continuously adapt and improve their programs.
Skill Relevance: Regular communication ensures that skills taught in educational programs remain relevant and up-to-date with industry standards.

7. Workforce Development Programs:

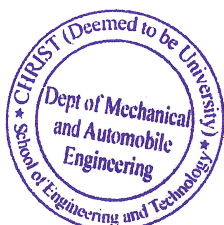
Skill Enhancement Workshops: Industries can sponsor workshops and training sessions to enhance specific skills among students.

Job Placement Assistance: Collaborative efforts can include job fairs, recruitment drives, and placement assistance, ensuring a smooth transition from education to employment.

Daimler truck innovation center India (DTICI), Bangalore

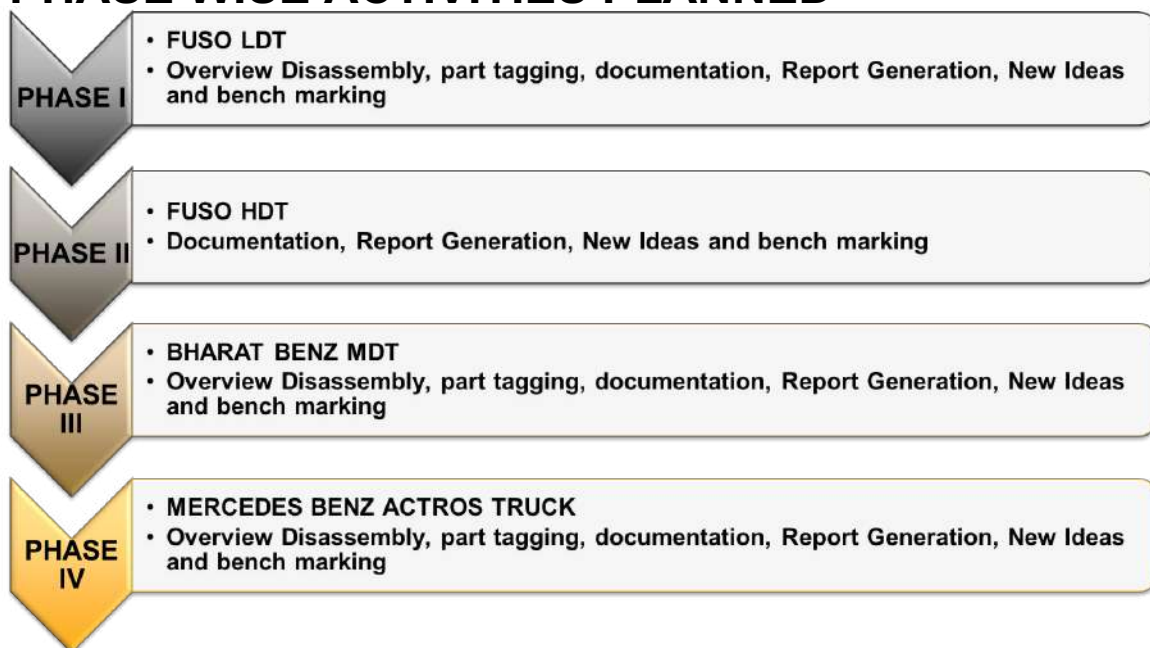
CHRIST-DTICI DAIMLER TRUCK Hands-On FACILITY

CU-MBRDI MOU DATE :11 th AUGUST 2017-2019		
CU-MBRDI MOURENEWAL DATE :11 th AUGUST 2019-2021		
CU-DTICI MOU DATE: 2 nd NOVEMBER 2022-2024		
“We are delighted to partner with DTICI in empowering the students with technical skills. While theoretical knowledge plays a crucial role in the development of students’ expertise, practical exposure will facilitate a deeper understanding and connection to the industry. Collaborating with DTICI will ensure that students receive hands-on experience in a complex industry like transportation. This initiative will help the next gen to scale themselves to the changing market demands.”		
Phase-I	FUSO CANTER (Low Duty Truck)-COMPLETED	Converted the IC engine truck to E-Truck
		



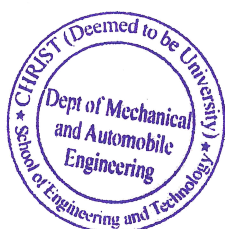
Phase-II	FUSO Super Great Truck- COMPLETED	
		
Phase-III	Bharat Benz Truck	ONGOING
		
Phase-IV	Mercedes Benz Actross Truck	
		

PHASE WISE ACTIVITIES PLANNED



ACTIVITIES CONDUCTED:

Date	Activity	Members from MBRDI	CHRIST students & Staff
Nov 2017 to Mar 2018	Tear Down of FUSO Canter Truck.	202	55 students + one teaching faculty and One Non-teaching faculty.
Jun 2018 to Aug 2018	Assembly of FUSO Canter Truck	202	55 students + three teaching faculties and One Non-teaching faculty.
Dec 2018	Tear Down of FUSO Canter Truck	190	55 students + three teaching faculties and One Non-teaching faculty.
Jan 2019 to Mar 2019	Tear Down of FUSO Super Great Truck.	150	55 students + three teaching faculties and One Non-teaching faculty.
Jan 2022 to Mar 2023	Tear Down of FUSO Super Great Truck.	127	60 students + Two teaching faculties and One Non-teaching faculty.
Nov 2022-May 2023	Conversion of IC engine truck to Electric Truck Under Project Lion	53	19 students + 10 SME +Two teaching faculties and One Non-teaching faculty.



INTERNSHIP/PLACEMENT OFFERED BY MBRDI:

Year	Fastrack Internship/ Paid Internship	Placement
2017-18	Nil	03
2018-19	01	10
2019-20	02	01
2021-22	01	01
2022-23	19	07
2023-24	02	02





Mercedes-Benz

FACULTY OF ENGINEERING

DEPARTMENT OF MECHANICAL & AUTOMOBILE ENGINEERING

Cordially invites you For the inaugural function of



CU - MBRDI HANDS ON

DAIMLER TRUCKS

F A C I L I T Y

20

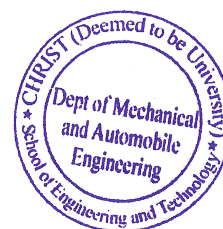
November 2017

Kengeri Campus, Block-5, @ 15:50 hrs

Chief Guest

Mr. Manu Saale

Managing Director & CEO,
MBRDI Pvt. Ltd., Bengaluru.





INAUGURATION OF DAIMLER TRUCK TEAR DOWN FACILITY - 20-11-2017



CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE - INDIA



Mercedes-Benz



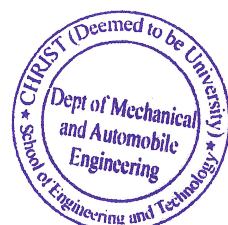
DR. WALTER SLADEK'S VISIT 10 JANUARY 2019



CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE - INDIA

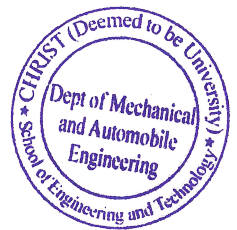


Mercedes-Benz



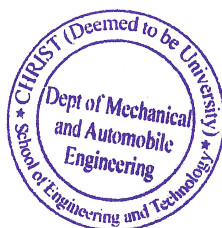


PHASE-I: MITSUBISHI FUSO CANTER - LOW DUTY TRUCK (LDT)

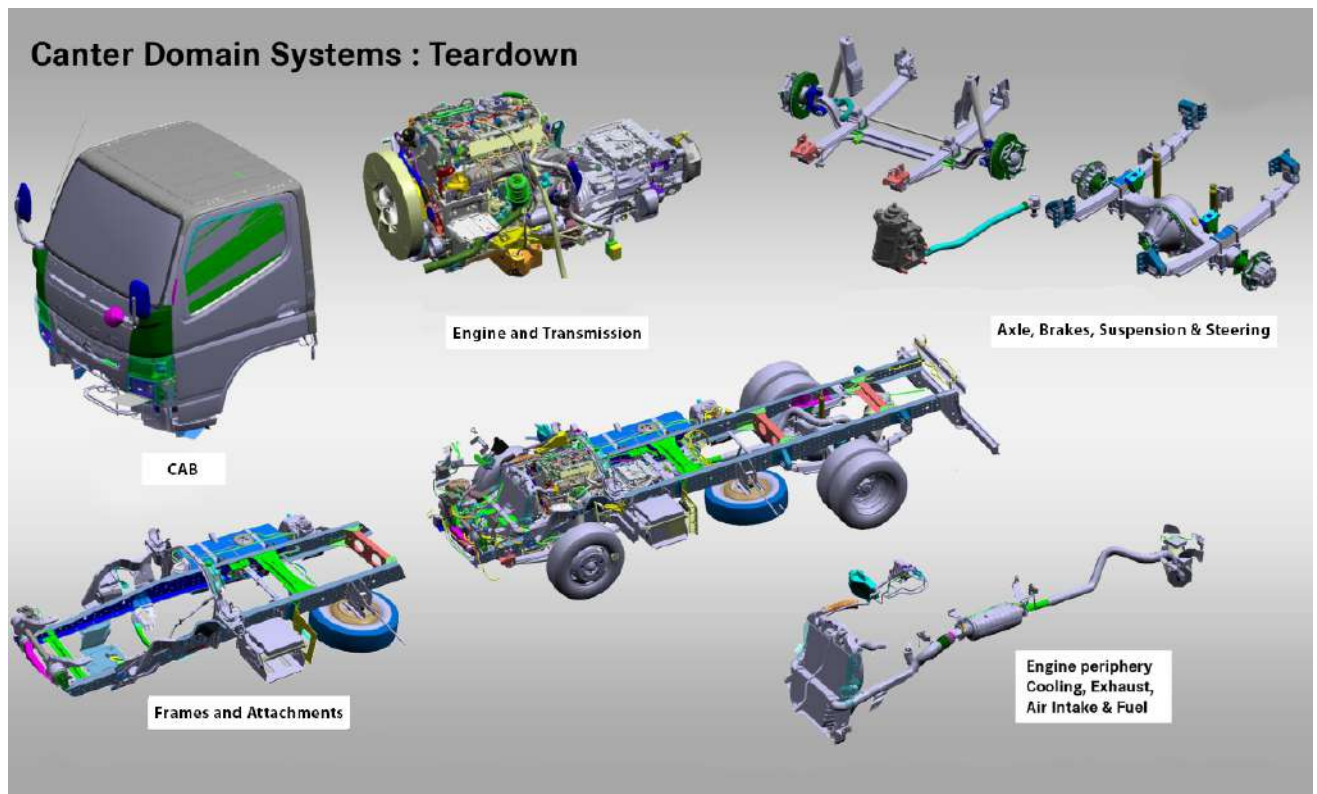




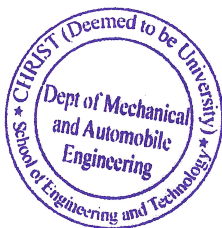
**PHASE-I: MITSUBISHI FUSO CANTER - LOW DUTY TRUCK (LDT)
CONVERTED INTO e-TRUCK UNDER PROJECT Lion**



Canter Domain Systems : Teardown



TEARDOWN ACTIVITY DOMAINS

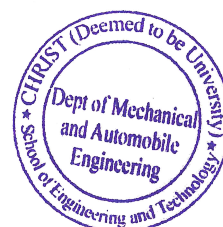


DAIMLER TRUCK

Innovation Center India

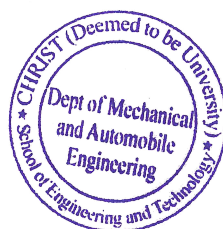


PHASE-II: MITSUBISHI FUSO SUPER GREAT- HEAVY DUTY TRUCK (HDT)





PHASE-III: BHARAT BENZ- HEAVY DUTY TRUCK (HDT)



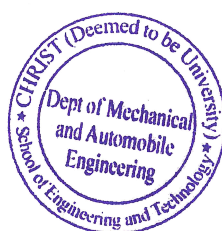


PHASE-IV: Mercedes Actros Truck- HEAVY DUTY TRUCK (HDT)

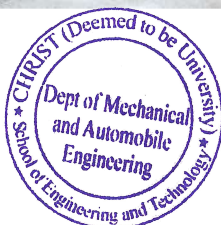
Hands-on Training for the students 2023-24

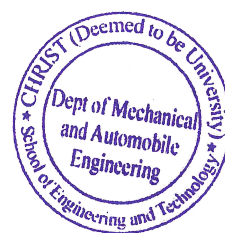
Sl. No.	Reg No.	Student Name	Class	Domain	Date
1	2161216	RAHUL REDDY S	6BTAE	CORE TEAM	Available for all the below mentioned date
2	2161217	NABENDU RAJESH	6BTAE		
3	2161220	IMSUSEN LEMTUR	6BTAE		
4	2161221	PAUL AFRIDY KURBAH	6BTAE		
5	2161225	AMALKRISHNA P A	6BTAE		
6	2161226	ATHARVA K MOKASHI	6BTAE		
	2362014	ADITYA AGARWAL	2BTPHY-G	CABIN TEAM	18 th and 19 th March 2023
8	2360626	HARSH DEEP	2BTCHE L		
9	2260620	MANASVI M SHETTY	4BTEC		

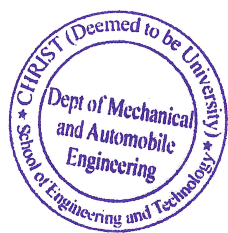
10	2260621	MONICA SALESH	4BTEC		
11	2260623	NIYA MARIA JOHNS	4BTEC		
12	2261433	AMAL THOMAS	4BTME		
13	2262815	JOHANN P CHERIYAN	4BTRAM		
14	2162842	DEEPAK BULDAK	6BTRM	Suspension	4 th April 2024
15	2260633	SAHANA M S	4BTEC		
16	2262821	MIHIRA SUDHEER NAIR	6BTRM		
17	2362178	SUHAS G	2BTPHYG		
18	2362168	MOHESH V K	2BTPHYG		
19	2162843	AISHWARYA T G	6BTRM		
20	2162826	KARNIKA JAIN	6BTRM		
21	2161406	ATIF RAZA	6BTME	Piping	5 th March 2024
22	2161441	ABHISHEK TRIPATHI	6BTME		
23	2362146	RYAN XAVIER GOMES	2BTPHY G		
24	2161425	HRIDYA SOUMIA KRISHNA	6BTME		
25	2161208	KEVIN VIVIAN L	AB		
26	2161451	RAJESH M J	6BTME		
27	2161426	PARTHVI SHEKHAWAT	6BTME	Axles	19 th April 2024
28	2161414	KAUSHIK K H	6BTME		
29	2161450	BHARGAV. M	6BTME		
30	2260602	ABHINA K V	4BTEC		
31	2260605	ANSHI SHAJI	4BTEC		
32	2261413	JERRY V JOY	4BTME		
33	2363058	SARAVANAKUMAR	2BTAIML		
34	2260641	STEEVA XAVIER	4BTEC		
35	2261439	INGUVA KARTHIK	4BTME	Wiring Harness	5 th March 2024
36	2261419	NOEL REJI	4BTME		
37	2261415	JOSEPH SEBASTIAN	4BTME		
38	2261404	ADITYA K	4BTME		
39	2160312	ALPHY JOSE	6BTCS B		
40	2160306	AKHINESH VS	6BTCS B		
41	2360476	TRISHA CLARA KURIAN	2BTCHE K		

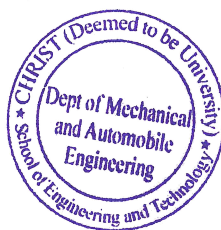


Photos of Hands-on Training for the students 2023-24



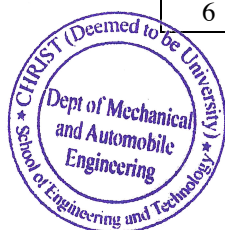






Daimler Truck Innovation Center India (DTICI) Project Lion Selected students for Paid Internship

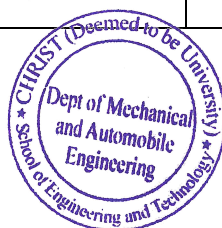
Mechanical, Automobile, Robotics and Mechatronics (UG) Student List					
Sl. No.	Reg No.	Student Name	Class	E-mail Id	Mobile No.
1	1961001	ABCHEN E BENO	7BTAE	abchen.e@btech.christuniversity.in ,	8220933412
2	1961206	MOHAMED ILYAS PADIYATH MOHAMED	7BTAE	mohamed.ilyas@btech.christuniversity.in ,	7356237090
3	1961209	SAMPREETH SUNKAD	7BTAE	sampreeth.sunkad@btech.christuniversity.in ,	9916363557
4	1961211	SOURABH S MOILY	7BTAE	sourabh.s@btech.christuniversity.in ,	9008456923
5	1961218	ANKIT	7BTAE	ankit.garg@btech.christuniversity.in ,	7306451030
6	1961220	J ASHWIN GOWDA	7BTAE	ashwin.gowda@btech.christuniversity.in ,	9019217375
7	1961002	ALEN SHAJU	7BTAE	alen.shaju@btech.christuniversity.in ,	9562529465
8	1961213	JEFFRON S	7BTAE	jeffron.s@btech.christuniversity.in ,	9880478701
9	1961402	ACHU KARAMCHAND H A	7BTME	achu.karamchandh@btech.christuniversity.i n ,	7025386043
10	1961416	MUHAMMAD ASHHAQ P P	7BTME	muhammad.ashhaq@btech.christuniversity.i n ,	8113006864
11	1960112	JENNIFER	7BTME	jennifer@btech.christuniversity.in ,	9353319788
12	1961423	AQIB RIZAL THENNADAN	7BTME	aqib.rizal@btech.christuniversity.in ,	9632195600
13	2061210	RAZAN MOHAMMED HASHIM	5BTAE	razan.mohammed@btech.christuniversity.in ,	9746034651
14	2061218	JEFFRY JOHN JOSE	5BTAE	jeffry.jose@btech.christuniversity.in ,	9048838772
15	2061458	TEJAS B S	5BTME	tejas.bs@btech.christuniversity.in ,	86607 93897
EEE Student List					
Sl. No.	Reg No.	Student Name	Class	E-mail Id	Mobile No.
1	1960811	ROSHNI TRESA CHERIAN	7BTEE	roshni.tresa@btech.christuniversity.in	8086814300
2	1961439	VISHNU PADMARAJAN	7BTEE	vishnu.padmarajan@btech.christuniversity.i n	8848998312
3	1960815	CERIN GEORGE	7BTEE	cerin.george@btech.christuniversity.in	7892916229
4	1960613	STEBEN BABU	7BTEE	steben.babu@btech.christuniversity.in	7736746362
5	1960804	AMITH CARMEL A	7BTEE	amith.carmel@btech.christuniversity.in	7349050814
6	1961431	SAJJAD ABDUL RAHEEM	7BTEE	sajjad.abdul@btech.christuniversity.in	9497008076



7	1960821	JINO JAISON JOHNS	7BTEE	jino.johns@btech.christuniversity.in	8714211604
8	1960806	MENTA VENKAT CHANDRAHAS	7BTEE	menta.venkat@btech.christuniversity.in	9901328078
9	2267501	JOEL ABRAHAM MATHEWS	M.Tech	joel.abraham@mtech.christuniversity.in	9961617592

Department paid internship Details through DTICI, Bangalore

Sl.No	Name/ Register No	Name of the Industry	Stipend details (if any)	Name of the External Guide	Title of you project report (as in the report)
1	Jennifer 1960112	Daimler truck innovation centre India (DTICI)	25,000 per month	Manoj Deasi	Wiring harness for Lion truck
2	Achu karamchan dh A 1961402	Daimler truck innovation centre India (DTICI)	25,000 per month	Sathwik umesha	Radiator sizing & mount design for canter electric truck conversion
3	Sampreeth Sunkad 1961209	Daimler truck innovation centre India (DTICI)	25,000 per month	Sarang Kulkarni	Entire vehicle packaging for high voltage, low voltage components and cooling system
4	Ankit 1961218	Daimler truck innovation centre India (DTICI)	25,000 per month	Krishnakant Sonwane	Chassis and its aggregate assembly and restoration
5	Abchen E. Beno 1961001	Daimler truck innovation centre India (DTICI)	25,000 per month	Navas Kunnath	E-Drive Powertrain Bracket Design
6	J Ashwin Gowda 1961220	Daimler truck innovation centre India (DTICI)	25,000 per month	Mr. Srinivasan Chockalingam	Design Of Front Box for Low Performance Electric Vehicle Conversions
7	Sourabh S Moily 1961211	Daimler truck innovation centre India (DTICI)	25,000 per month	Mr.Hemanth Gull	Design Layout and Planning for Vacuum Pump and Cooling System
8	Muhamma d Ashhaq P P 1961416	Daimler truck innovation centre India (DTICI)	25,000 per month	Krishnakant Sonwane	ADDITION OF STRUCTURAL COMPONENTS IN CHASSIS ATTACHMENT TO CONVERT EXISTING FUSO CONVENTIONAL VEHICLE INTO AN ELECTRIC VEHICLE



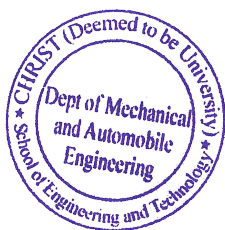
9	Mohamed Ilyas 1961206	Daimler truck innovation centre India (DTICI)	25,000 per month	Srinivasan Chockalingam	Integration of electrical components for chassis upgradation and front box designing
10	Alen Shaju 1961002	Daimler truck innovation centre India (DTICI)	25,000 per month	Chandrasekhar pattela	Packaging of low voltage components and design of mounting brackets
11	Jeffron S 1961213	Daimler truck innovation centre India (DTICI)	25,000 per month	Chandrasekhar Pettela	PROJECT LI-ON: Conversion of an IC Engine Truck to an E-Powered Truck Design and manufacturing of brackets for EV Control Modules, HMI and fabrication of the Cabin Body

Placed in DTICI- 2022-23

Sl.No	Name/ Register No	Designation	Salary Details
1	Abchen E. Beno 1961001	Graduate Engineer Trainee	8,00,000 per annum
2	Sourabh S Moily 1961211	Graduate Engineer Trainee	8,00,000 per annum
3	Muhammad Ashhaq P P 1961416	Graduate Engineer Trainee	8,00,000 per annum
4	Alen Shaju 1961002	Graduate Engineer Trainee	8,00,000 per annum

Placed in DTICI- 2023-24

Sl.No	Name/ Register No	Designation	Salary Details
1	2061206 (JOSHUA C WILSON)	Graduate Engineer Trainee	8,00,000 per annum
2	2061402 (ADNAN KHAN)	Graduate Engineer Trainee	8,00,000 per annum



GTTC (Government Tool Room and Training Center),Bangalore

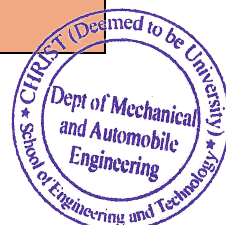
Internship Details:

The Government Tool Room and Training Center (GTTC) in Bangalore is a prominent institution that plays a vital role in providing technical education and skill development in the field of tool engineering and allied disciplines.

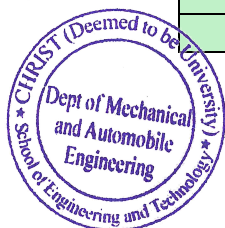
The students of the department take this opportunity to undergo internship for about 30 days and gain the knowledge in the area of Manufacturing.

List of students Benefited From this Programme:

1	LEOBEN THOMAS	2261416	4BTME	6360284096	Industrial Metrology
2	ADARSH K PILLAI	2261403	4BTME	8999714159	
3	THOMAS PAUL	2261424	4BTME	8848449568	
4	JOSEPH SEBASTIAN	2261415	4BTME	9072305999	
5	ALJO PAUL	2261406	4BTME	8590964353	
6	ADITYA K	2261404	4BTME	9061907645	
7	PAUL STEPHANO	2162815	6BTRAM	8800435026	Industrial Robotics
8	SIDDHARTH KARUN	2162838	6BTRAM	9048575228	
9	ARON BINO	2162804	6BTRAM	6360900447	
10	NALINA VINOD	2162829	6BTRAM	9074684370	
11	SIDHARTH NR	2261422	4BTME	8590862982	
12	ANAND SREEKUMAR	2261408	4BTME	8891519780	
13	ABY ROY	2261402	4BTME	9108941038	
14	ABHISHEK BINU	2262801	4BTRAM	8590075066	
15	ALVIN JOSEPH SUNNY	2262804	4BTRAM	7982446451	
16	AMAL DS	2262805	4BTRAM	8129371883	
17	JITHIN BOJ S	2262811	4BTRAM	9345887527	
18	JOEL MATHEW JENI	2262813	4BTRAM	6238595066	
19	JOYAL REJI	2262816	4BTRAM	9037127824	
20	JUSTIN VINO	2262817	4BTRAM	9048817056	
21	MIRIAM ALICE SAM	2262822	4BTRAM	7994915552	
22	NAJMAL NASEEM	2262823	4BTRAM	9207747137	
23	TAASHU ROY	2262832	4BTRAM	9369706275	
24	TOBIN THOMAS	2262834	4BTRAM	6360466007	
25	THIRUPPATHI P	2262833	4BTRAM	9994018078	
26	KEERTHANA MAHESH KUMAR	2262837	4BTRAM	9686984542	
27	VANEESH M S	2262842	4BTRAM	7892148597	
28	NIDHIN E	2262843	4BTRAM	8281499502	
29	VISHWANATH MARAMWAR	2262848	4BTRAM	9618770518	
30	K GOWTHAM	2262852	4BTRAM	9994206828	
31	ASHIQUE ALI	2262859	4BTRAM	7907945803	
32	NAYAN JAMSHITH	2261418	4BTME	9744880470	
33	RISHAN KS	2162816	6BTRAM	7025023671	
34	ZEISHAN	2162836	6BTRAM	8592000555	

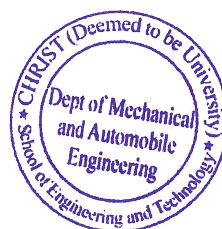


35	PRIYANKA CHAUDHARY	2162830	6BTRAM	8200765776	
36	BHANU PRAKASH REDDY	2262836	4BTRAM	9380376606	
37	KAVIN E S	2162811	6BTRAM	7305517222	
38	RACHEL MANOHARAN	2162832	6BTRAM	8217617207	NX CAD
39	AISWARYA T G	2162843	6BTRAM	8111833196	
40	ALIN THERESA JOSE	2162839	6BTRAM	9778701142	
41	DOKKA ABHISHEK DIKSHITH	2261226	4BTAE	9121497757	
42	ISMAIL JAMEEL AAGHA	2261209	4BTAE	7306112890	
43	ZAIM ABDUREHMAN P K	2261215	4BTAE	9847253555	
44	JUNAID MS	2261232	4BTAE	6364818188	
45	J TARUN JAY	2261234	4BTAE	8904295455	
46	SANTOSH T.P	2261231	4BTAE	7338244641	
47	SAMUEL PAUL ORAM	2261219	4BTAE	8328262450	
48	S.GIRIDHAR BABU	2261227	4BTAE	7569540145	
49	JOHN S KORATTIYIL	2261211	4BTAE	9846314960	
50	S. DHURVA DEEP VARMA	2261207	4BTAE	9393730077	
51	ADITHYA C	2261201	4BTAE	8129753806	
52	ABHIJITH . S	2261213	4BTAE	9206669203	
53	SAIJAN A	2161420	6BTME	6374088478	
54	GURRAM VIJAY SIDDARTHA	2161437	6BTME	9705946487	
55	ATIF RAZA	2161406	6BTME	7898159100	
56	SANDHU SONALJ	2161443	6BTME	7892956218	
57	SHIVANAND DESHPANDE	2162847	6BTRAM	8639910669	
58	MALAKSHMI	2162827	6BTRAM	8431217556	
59	VEEKSHITHA	2162825	6BTRAM	8247652863	
60	PRINCE JOSEY	2161209	6BTAE	8146555130	
61	JACOB KOSHY VAIDYAN	2261412	4BTME	9899367446	
62	P MANIDEEP REDDY	2261436	4BTME	9392697155	
63	NIKITA BORA	2261428	4BTME	8858775531	
64	NILESH KUMAR SINGH	2161454	6BTME	6363497946	
65	DEEPAK BULDAK	2162842	6BTRAM	6363578346	
66	D JOSHUA DANIEL	2261411	4BTME	8073917502	
67	ABEL SHIBU ISSAC	2261401	4BTME	9037996304	
68	ERRAIANBU	2261420	4BTME	9442565462	
69	JERRY V JOY	2261413	4BTME	9037905292	
70	G WILLIAM PRADEEP KUMAR	2261434	4BTME	7019140462	
71	NOEL REJI	2261419	4BTME	9188358530	
72	NILESH KUMAR SINGH	2161454	6BTME	6363497946	
73	JINU JOJU	2161432	6BTME	8590926086	
74	ABHINAV K	2161401	6BTME	7907222473	
75	A LOHITH NAIDU	2161428	6BTRAM	7075499416	
76	RYAN ROBINS	2261218	4BTAE	8790428990	
77	ZUHAIB UR REHMAN	2261214	4BTAE	7349552666	
78	ABRAHAM THOMAS JOY	2262802	4BTRAM	9562799676	PLC and Mechatronics
79	SAMUEL SEBASTIAN	2262830	4BTRAM	7358616787	
80	NISHANT SONI	2262847	4BTRAM	9175910059	





Internship Training in GTTC

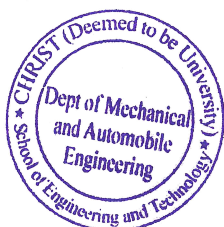


Wipro 3D, Bangalore

1. The Department of Mechanical and Automobile Engineering is launching an Honors Programme in Digital Manufacturing in partnership with Wipro 3D. The collaboration is outlined in the attached memorandum of understanding.
2. This specialized program is designed to produce engineering graduates well-versed in Industry 4.0 concepts, ensuring they possess skills in high demand in the industry. Seventeen students from mechanical, automobile, and robotics engineering, meeting the necessary criteria, have enrolled in this distinguished Honors Programme.
3. The curriculum comprises five courses, each carrying four credits and spanning four semesters. The program is a joint effort between the department faculty and Wipro 3D experts. Theoretical learning is complemented by practical experience, with Wipro 3D actively involved in conducting hands-on labs, specifically focusing on 3D printing and machining. These interactive sessions will be conducted at Wipro 3D Company, located at Wipro Enterprises Pvt Ltd 1, Peenya, Bengaluru, Karnataka 560058.
4. Teaching hours have been meticulously allocated, with a total of 225 hours dedicated to the five courses. Wipro 3D will contribute 100 hours at their training center, while the department will cover the remaining 125 hours. The program commenced in July with the approval of the management. During the first subject, "Design for Additive Manufacturing," students received a total of 46 hours of instruction. The department faculty delivered 20 hours, while Wipro 3D's technical team provided 26 hours of training. Additionally, students gained 6 hours of valuable industrial training experience at Wipro 3D's Peenya campus. For your reference, the program's course structure and the list of enrolled students are attached to this document.

COURSE STRUCTURE

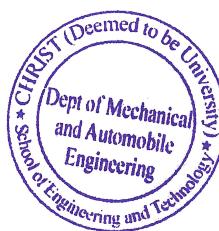
Sl. No.	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits	TO BE TAKEN DURING
			L	T	P		L	T	P		
1	MAHO331DMP	Design for Additive Manufacturing	3	0	2	100	3	0	1	4	III
2	MAHO431CAEP	Computer Aided Engineering	3	0	2	100	3	0	1	4	IV
3	MAHO531REP	Reverse Engineering	3	0	2	100	3	0	1	4	V
4	MAHO582P	Project	0	0	8	100	0	0	4	4	V
5	MAHO631IAP	Internet Of Things for Industry Automation	3	0	2	100	3	0	1	4	VI
Total			12	0	16	500	12	0	8	20	



Sl.No.	Course Code	Course Name	Faculty Handling the subject
1	HODM01	Design for Additive Manufacturing (Wipro Tech)	Dr. Anil Raj (2296)

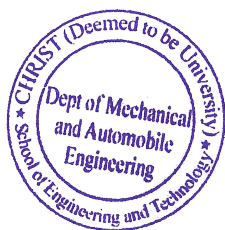
List of students for Honours Program in Digital Manufacturing. (5th Semester)

S. No	Name	Branch	Register No:
1	Mihira Sudheer Nair	5BTRM	2262821
2	R.Benny Anton Raj	5BTME	2261429
3	Adarsh K Pillai	5BTME	2261403
4	Thomas Paul	5BTME	2261424
5	Anand Sreekumar	5BTME	2261408
6	Leoben Thomas	5BTME	2261416
7	Aditya k	5BTME	2261404
8	Joseph Sebastian	5BTME	2261415
9	Shreyansh Reddy Chintala	5BTME	2261235
10	Aljo Paul	5BTME	2261406
11	John S Korattiyil	5BTAE	2261211
12	Daravath Sai Nithin	5BTME	2261437
13	Inguva Karthik	5BTME	2261430
14	Dokka Abhishek Dikshith	5BTAE	2261226
15	Sarthak Mishra	5BTME	2261435
16	Jaidan Steve Samuel	5BTAE	2261217
17	Amal Thomas	5BTME	2261433



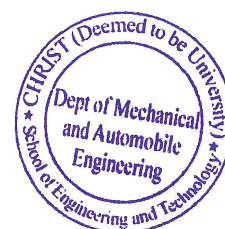
COURSE STRUCTURE

Sl. No	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits	TO BE TAKEN DURING
			L	T	P		L	T	P		
1	MAHO331DMP	Design for Additive Manufacturing	3	0	2	100	3	0	1	4	III
2	MAHO431DMP	Computer Aided Engineering	3	0	2	100	3	0	1	4	IV
3	MAHO531DMP	Reverse Engineering	3	0	2	100	3	0	1	4	V
4	MAHO582DMP	Project	0	0	8	100	0	0	4	4	V
5	MAHO631DMP	Internet Of Things for Industry Automation	3	0	2	100	3	0	1	4	VI
		Total	15	0	10	500	15	0	5	20	



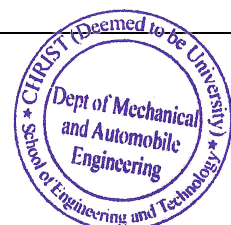
List of students for Honours Program in Digital Manufacturing. (3rd Semester)

Sl no	Register Number	Name	Course name	email id
1	2361210	Jagath Krishna T	3BTAE	jagath.t@btech.christuniversity.in ,
2	2361208	DERICK R	3BTAE	derick.r@btech.christuniversity.in,
3	2361205	Belhin J G	3BTAE	Belhin.jg@btech.christuniversity.in,
4	2360420	Nandhu krishna PN	3BTAE	nandhu.krishna@btech.christuniversity.in,
5	2361207	Bhumit Agarwal	3BTAE	Bhumit.agarwal@btech.christuniversity.in,
6	2361405	Akhildas TD	3BTME	akhildas.td@btech.christuniversity.in,
7	2361426	HARSHAL BHATKAR	3BTME	bhatkar.harshal@btech.christuniversity.in,
8	2361421	Preetham B C	3BTME	preetham.bc@btech.christuniversity.in,
9	2362146	Ryan Xavier Gomes	3BTME	ryan.xavier@btech.christuniversity.in,
10	2361404	Adhith S	3BTME	adhith.s@btech.christuniversity.in,
11	2361413	Lea Rozalia Cecil	3BTME	lea.rozalia@btech.christuniversity.in ,
12	2361403	Abin Joel	3BTME	abin.joel@btech.christuniversity.in,
13	2361408	Dhanish munavvir	3BTME	dhanish.munavvir@btech.christuniversity.in,
14	2361412	Krish Mahesh Menon	3BTME	krish.mahesh@btech.christuniversity.in,
15	2361003	Alena Mathew Philip	3BTME	alena.mathew@btech.christuniversity.in,
16	2361037	Sandra Thomas	3BTME	sandra.thomas@btech.christuniversity.in,
17	2361425	Vaahinee B	3BTME	vaahinee.b@btech.christuniversity.in,
18	2362819	Leo Abraham	3BTRM	leo.abraham@btech.christuniversity.in,
19	2362835	Ujwal Uthaman	3BTRM	ujwal.uthaman@btech.christuniversity.in,
20	2362852	MOURYA K	3BTRM	mourya.k@btech.christuniversity.in ,
21	2362802	ABIN JOSE	3BTRM	abin.jose@btech.christuniversity.in,
22	2362806	Alen George	3BTRM	george.alen@btech.christuniversity.in,
23	2362807	Bharath MS	3BTRM	bharath.ms@btech.christuniversity.in,
24	2362811	Geethika.k	3BTRM	geethika.kanithottathil@btech.christuniversity.in ,
25	2362809	Edwin Benny	3BTRM	edwin.benny@btech.christuniversity.in,
26	2362836	Vignesh Padiyath	3BTRM	vignesh.padiyath@btech.christuniversity.in,
27	2362847	Alwin salmon	3BTRM	alwin.salmon@btech.christuniversity.in,
28	2361409	Hasmukh suthar	3BTME	hasmukh.suthar@btech.christuniversity.in



DETAILED SYLLABUS

COURSE NAME: DESIGN FOR ADDITIVE MANUFACTURING					
COURSE CODE: MAHO331DMP					
	L	T	P	Category	PEC
Contact Hrs./Week	3	0	2	CIA Marks	50
Contact Hrs./Sem.	45	0	30	ESE Marks	50
Credits.	3	0	1	Exam Hours	3
Course objectives: Additive Manufacturing (AM) is an economically viable alternative to conventional manufacturing technologies for producing highly complex parts. The main objective of this course is to acquaint students with the concept of AM, various AM technologies, selection of materials for AM, modeling of AM processes, and their applications in various fields. The course will also cover AM process plan including building strategies and post-processing.					
Prerequisites:					
Units					Teaching Hours
Unit-1					
Overview, Basic principle need and advantages of additive manufacturing, Procedure of product development in additive manufacturing, Classification of additive manufacturing processes, Materials used in additive manufacturing, Challenges in Additive Manufacturing.					9
Unit-2					
Z-Corporation 3D-printing, Stereolithography apparatus (SLA), Fused deposition modeling (FDM), Laminated Object Manufacturing (LOM), Selective deposition lamination (SDL), Ultrasonic consolidation, Selective laser sintering (SLS), Laser engineered net shaping (LENS), Electron beam free form fabrication (EBFFF), Electron beam melting (EBM), Plasma transferred arc additive manufacturing (PTAAM), Tungsten inert gas additive manufacturing (TIGAM), Metal inert gas additive manufacturing (MIGAM).					9
Unit-3					
Axes, Linear motion guide ways, Ball screws, Motors, Bearings, Encoders/ Glass scales, Process Chamber, Safety interlocks, Sensors. Introduction to NC/CNC/DNC machine tools, CNC programming and introduction, Hardware Interpolators, Software Interpolators, Recent developments of CNC systems for additive manufacturing					9
Unit-4					
Preparation of 3D-CAD model, Reverse engineering, Reconstruction of 3D-CAD model using reverse engineering, Part orientation and support generation, STL Conversion, STL error diagnostics, Slicing and Generation of codes for tool path, Surface preparation of materials.					8
Unit-5					



Support material removal, surface texture improvement, accuracy improvement, aesthetic improvement, preparation for use as a pattern, property enhancements using non-thermal and thermal techniques, Brief information on characterization techniques used in additive manufacturing, Applications of additive manufacturing in rapid prototyping, rapid manufacturing, rapid tooling, repairing and coating.	10
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Self-study:

Site/Industrial Visits:

Course outcomes:

CO1: Demonstrate the knowledge of Additive Manufacturing and Rapid Prototyping technologies. {L1, L2} {PO1,PO2,PO11}

CO2: Describe different RP techniques used by manufacturing industries{{ L2}{PO1,P2,PO11}

CO3: Discuss fundamentals of various mechanisms used in modern machine tools to accommodate additive manufacturing.{ L2}{PO1,PO2,PO11}

CO4: Analyze various reverse engineering techniques in preparing STL models and 3D- CAD models to incorporate in rapid prototyping technique.{ L2, L3}{PO1,PO2,PO11}

CO5: Examine various techniques in additive manufacturing techniques for preparing a better product.{L2}{PO6,PO9,PO10,PO11,PO12}

Text Books:

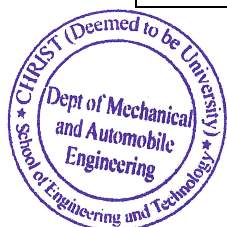
T1. Gibson, I, Rosen, D W., and Stucker,B., Additive Manufacturing Methodologies: Rapid Prototyping to Direct Digital Manufacturing, Springer, 2010.

T2. Chua C.K., Leong K.F., and Lim C.S., “Rapid prototyping: Principles and applications”, Third Edition, World Scientific Publishers, 2010.

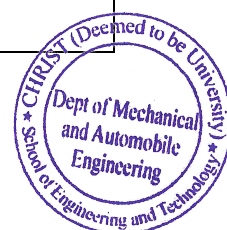
T3. Chee Kai Chua, Kah Fai Leong, 3D Printing and Additive Manufacturing: Principles and Applications: Fourth Edition of Rapid Prototyping, World Scientific Publishers, 2014.

T4. Gebhardt A., “Rapid prototyping”, Hanser Gardener Publications, 2003.

COURSE NAME: COMPUTER AIDED ENGINEERING					
COURSE CODE: MAHO431DMP					
	L	T	P	Category	PEC
Contact Hrs./Week	4	0	0	CIA Marks	50
Contact Hrs./Sem.	45	0	30	ESE Marks	50
Credits.	3	0	1	Exam Hours	3
Course objectives: - To introduce the Industry experience to student in product design and developments. - To know the stages involved in any product design and development.					



• To develop the student's skills to solve the problems facing while geometry modelling and FE modelling. • To guide the students in selection of geometry for its validation for required application. • To enhance the problem analysis knowledge in modelling and analysis. • To improve the knowledge in identify the problem and selection of analysis method and hence to validate the output of CAE tools.	
Prerequisites:	
Units	Teaching Hours
Unit-1	
INTRODUCTION: CAD and Analysis tools. Geometry modelling, Finite Element Modelling, Selection of geometry, Selection of element types, Loads and Boundary conditions, Validation of results.	9
Unit-2	
Geometry Modelling: Modelling a point, line, surface and solids. Boolean operations, assembly of parts. Import and export of geometry. Introduction to GD&T.	9
Unit-3	
Finite Element Modelling: Selection/disfeaturing of geometry for FE modelling, dividing surfaces and cutting of solids. Setting preferences. Element qualities and their standard values required for required analysis/results. Import and export of FEM files for analysis and results review.	9
Unit-4	
Loads and boundary conditions: Selection of nodes, surfaces. Local coordinate systems, assigning the coordinate system to nodes. Selection or estimation of loads in terms of point, surface and body loads. How to apply inertia loads. Solution control and output requests: Defining required output parameters/results other than standard output results. Defining the solution parameters like, end time, timesteps, load steps, etc.,	9
Unit-5	
Error rectification: Study on common type of errors while solving FE problems. Understanding the error types. How to address these errors. Verification/Validation of output results: How to validate results from FEA. Steps involved in verification of results. Identifying reason for deviation in results as compared to calculated results through classical methods or lab test results. Modifying/simplifying the input data based on output results.	9
Self-study:	
Site/Industrial Visits:	



Course outcomes:

At the completion of the course, students will be able to...

CO 1: Understand the possibilities of CAD modelling and analysis. (PO1, PO2, L1 & L2)

CO 2: Apply geometrical modelling to create solid models and its boundary conditions. (PO1, PO2, PO3, L2, L3)

CO 3: Apply the knowledge of static and dynamic analysis on solid models. (PO1, PO2, PO3, L2, L3)

CO 4: Apply the knowledge of loading and boundary conditions on part models. (PO1, PO2, PO3, L2, L3)

CO 5: Validate the results of FEA and apply error correction on solid models created. (PO1, PO2, PO3, L2, L3)

Text Books:

1. K L Narayana, P Kannaiah & K Venkata Reddy, "Machine Drawing" 5th edition, new age International Publishers 2016.

2. N.D.Bhat & V.M.Panchal, "A Primer on Computer Aided Machine Drawing-2007", VTU, Belgaum, 'Machine Drawing', 2012.

Reference Books:

R1. S. Trymbaka Murthy, "A Text Book of Computer Aided Machine Drawing", CBS Publishers, New Delhi, 2007

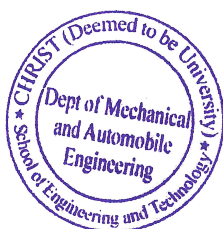
R2. K.R. Gopala Krishna, "Machine Drawing", Subhash Publication, 2012.

R3. Goutam Pohit & Goutham Ghosh, "Machine Drawing with Auto CAD", 1st Indian print Pearson Education, 2007

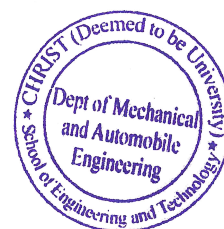
R4. Sham Tickoo, "Auto CAD 2015 for engineers and designers", Dream tech 2015

R5. N. Siddeshwar, P. Kanniah, V.V.S. Sastri, "Machine Drawing", published by Tata Mc GrawHill, 2006

R6. Alex Krulikowski, "Fundamentals of Geometric Dimension & Tolerancing", 6th edition, Goodheart-Willcox Pub, 25 November 2014



COURSE NAME: Reverse Engineering					
COURSE CODE: MAHO531DMP					
	L	T	P	Category	PEC
Contact Hrs./Week	3	0	2	CIA Marks	50
Contact Hrs./Sem.	45	0	30	ESE Marks	50
Credits.	3	0	1	Exam Hours	3
Course objectives: - Understand concept of reverse engineering - Understand principles of imaging, cross-sectional scanning, digital data, computational graphics - Understand legality of reverse engineering concept					
Prerequisites:					
Units					Teaching Hours
Unit-1					
Scope and tasks of RE, Process of duplicating, Definition and use of Reverse Engineering, Reverse Engineering as a Generic Process.					9
Unit-2					
Tools and Techniques for RE Object scanning: contact scanners, noncontact scanners, destructive method, coordinate measuring machine, Point Data Processing: pre processing and post processing of captured data, geometric model development, construction of surface model, solid model, noise reduction, feature identification, model verification.					9
Unit-3					
Introduction, current RP techniques and materials, Stereo Lithography, Selective Laser Sintering, Fused Deposition Modelling, Three-dimensional Printing, Laminated Object Manufacturing, Multijet Modelling, Laser-engineered Net Shaping, Rapid Prototyping, Rapid Tooling, Rapid Manufacturing.					9
Unit-4					
Cognitive approach to RE, Integration of formal and structured methods in reverse engineering, Integration of reverse engineering and reuse.					8
Unit-5					
Legal Aspects of Reverse engineering- copyright laws					10
Self-study:					
Site/Industrial Visits:					



Course outcomes:

At the completion of the course, students will be able to...

CO1: Use the Digitized Shape Editor (DSE) workbench

CO2: Import and process the digitized data (scans or clouds of points),

CO3: Quick Surface Reconstruction (QSR) from the digitized data.

CO4: Create a mesh and extract characteristic curves to create surfaces using point cloud data

CO5: Determine the legalities of reverse engineered products and designs.

Text Books:

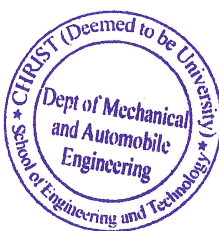
1. Product Design: Techniques in Reverse Engineering and New Product Development by K. Otto and K. Wood Prentice Hall, 2001.

2. Reverse Engineering: An Industrial Perspective by Raja and Fernandes. Springer-Verlag 2008

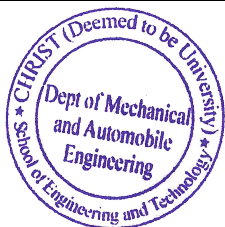
3. Reverse Engineering in Computer Applications. MIT Lecture Notes 2001

4. RE as necessary phase by rapid product development by Sokovic and Kopac. Journal of Materials Processing Technology 2005

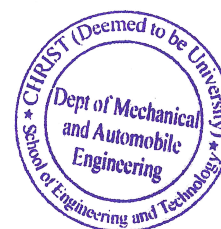
5. A Rapid Prototyping Methodology for Reverse Engineering of Legacy Electronic Systems by Deno, Landis, Hulina, and Sanjay IEEE International Workshop on Rapid System Prototyping, 1999.



COURSE NAME : INTERNET OF THINGS FOR INDUSTRY AUTOMATION					
COURSE CODE: MAHO631DMP					
	L	T	P	Category	PEC
Contact Hrs./Week	3	0	2	CIA Marks	50
Contact Hrs./Sem.	50	0	0	ESE Marks	50
Credits.	4	0	0	Exam Hours	3
Course objectives: This course focuses on the latest microcontrollers with application development, product design and prototyping. Ideally suited for engineering students and graduates with a basic understanding of electronics and microprocessors. The Internet of Things (IoT) is the next wave, world is going to witness. Today we live in an era of connected devices (mobile phones, computers etc.), the future is of connected things (Eg: home appliances, vehicles, lamp-posts, personal accessories, your pets, industrial equipments and everything which you use in day-to-day life). Internet of Things is a term given to the attempt of connecting objects to the internet and also to each other - allowing people and objects themselves to analyze data from various sources in real-time and take necessary actions in an intelligent fashion					
Prerequisites:					
Units					Teaching Hours
Unit-1					
Introduction to IoT Defining IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs.					9
Unit-2					
IoT & M2M Machine to Machine, Difference between IoT and M2M, Software define Network.					9
Unit-3					
Network & Communication aspects : Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination					9
Unit-4					
Challenges in IoT Design challenges, Development challenges, Security challenges, Other challenges.					8
Unit-5					
Domain specific applications of IoT Home automation, Industry applications, Surveillance applications, Other IoT applications					10



List of Experiments (If any):	
Introduction to Python, Introduction to different IoT tools, Developing applications through IoT tools, Developing sensor based application through embedded system platform, Implementing IoT concepts with python.	30
Self-study:	
Site/Industrial Visits:	
Course outcomes: At the completion of the course, students will be able to... CO 1: Will be able to explain the definition and significance of the Internet of Things. (PO1, PO2, L1 & L2) CO 2: differentiate between the levels of the IoT stack and be familiar with the key technologies and protocols employed at each layer of the stack (PO1, PO2, PO3, L2, L3) CO 3: apply the knowledge and skills acquired during the course to build and test a complete, working IoT system involving prototyping, programming and data analysis (PO1, PO2, PO3, L2, L3) CO 4: appreciate the role of big data, cloud computing and data analytics in a typical IoT system (PO1, PO2, PO3, L2, L3) CO 5: Identify how IoT differs from traditional data collection systems (PO1, PO2, PO3, L2, L3)	
Text Books: T1. Vijay Madiseti, Arshdeep Bahga, "Internet of Things: A Hands-On Approach" VPT; 1 edition (August 9, 2014). T2. Waltenegus Dargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks: Theory and Practice" Wiley (2010).	
Reference Books: R1. David Etter , "IOT (Internet of Things) Programming: A Simple and Fast Way of Learning IOT", Orient Blackswan Private Limited - New Delhi; First edition (2015) R2. RMD Sundaram Shriram K Vasudevan, Abhishek S Nagarajan , "Internet of Things", Wiley (2019).	
Online Resources: W1. https://nptel.ac.in/courses/106/105/106105166/	





Industrial Training at Wipro 3D, Bangalore



Industrial Training at Wipro 3D, Bangalore

Sanjna P Pangrahi
 Dr Sajna P Pangrahi

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