GMR Institute of Technology
An Autonomous Institute Affiliated to JNTU-GV

GMRIT Training Tomorrow's Engineers Today

1.2.2(B) Structure of the program clearly indicating courses, credits/Electives and Minutes of relevant Academic Council/BOS meetings highlighting the relevant documents to this metric

Department of Electronics & Communications Engineering

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Department of Electronics and Communication Engineering

Minimum Credits to be earned: 160 (for Regular Students)
127 (for Lateral Entry Students)

No	Course Code	Course	POs	Contact Hours			
				L	T	P	C
First Semester							
1	21HSX01	Communicative English	9,10, 12	2	-	-	2
2	21MAX01	Engineering Mathematics I	1,2,3,12	3	-	-	3
3	21PYX01 21CYX01	Engineering Physics / Engineering Chemistry	1,2,12 / 1,6,7,12	3/3	-	-	3/3
4	21BEX01 21BEX06	Basics of Engineering / IT Workshop	1,3,6,7,9,11,12/1,12	3/ -	-	-/ 3	3/1.5
5	21BEX02	Problem Solving and Programming Skills	1, ,2,3,12	3	-	-	3
6	21BEX03	Problem Solving and Programming Skills Lab	2,3,4,12	-	-	3	1.5
7	21BEX04/ 21BEX05	Engineering Drawing / Engineering Workshop	1,5,10,12/1,9,10,12	-	-	3/3	1.5/1.5
8	21PYX02/ 21CYX02	Engineering Physics Lab /Engineering Chemistry Lab	4,9,11/1,3,6,7,12	-	-	3/3	1.5
9	21HSX02/-	Communicative English Lab/-	9,10,12	-	-	3/-	1.5/-
			Total	**14/11**	**0**	**12/12**	**20/17**
Second Semester							
1		Language Elective	10,12	2	-	-	2
2	21MAX02	Engineering Mathematics II	1,2,3,12	3	-	-	3
3	21CYX01/ 21PYX01	Engineering Chemistry /Engineering Physics	1,3,6,7,12/4,9,11	3/3	-	-	3/3
4	21BEX01/ 21BEX06	Basics of Engineering/ IT Workshop	1,3,6,7,9,11,12/1,12	-/3	-	3/-	1.5/3
5	21BEX07	Python Programming	1,2,3,12	3	-	-	3
6	21BEX08	Python Programming Lab	2,3,4,5,12	-	-	3	1.5
7	21BEX05/ 21BEX04	Engineering Workshop / Engineering Drawing	1,9,10,12/1,5,10,12	-	-	3/3	1.5/1.5
8	21CYX02/ 21PYX02	Engineering Chemistry Lab/Engineering Physics Lab	1,3,6,7,12/4,9,11	-	-	3/3	1.5/1.5
9	-/21HSX02	-/Communicative English Lab	9,10,12	-	-	-/3	-/1.5
			Total	**11/14**	**0**	**12/12**	**17/20**
Third Semester							
1	21MA301	Complex Variables	1,2,3, PSO2	3	-	-	3
2	21EC301	Electronic Devices and Circuits	1,2,3,PSO1	3	-	-	3
3	21EC302	Linear Circuit Analysis	1,2,4,5, PSO1	3	-	2	4
4	21EC303	Logic Circuit Design	1,2,3, PSO1	3	-	-	3
5	21EC304	Random Variables and Stochastic Processes	1,2, 3,PSO2	3	-	-	3
6	21EC305	Signals & Systems	1,2,4,5, PSO2	3	-	2	4

7	21EC306	Electronic Devices and Circuits Lab	1, 2, 4, PSO1	-	-	3	1.5
8	21EC307	Logic Circuit Design Lab	1, 2, 4, 5, PSO1	-	-	3	1.5
9	21ESX01	Employability Skills I	1,2,5,8,10,12	-	-	2	-
10	21HSX11	CC & EC Activities I	6,7,9,10	-	-	1	-
			Total	**18**	**0**	**13**	**23**
Fourth Semester							
1	21CSE01	Object Oriented Programming	1,2, 3,5	3	-	-	3
2	21EC401	Analog and Digital Communications	1,2, 3,PSO2	3	-	-	3
3	21EC402	Analog Electronic Circuits	1, 2, 4,5, PSO1	3	-	2	4
4	21EC403	Electromagnetic Fields and Waves	1,2, 3,PSO2	3	-	-	3
5	21EC404	Linear Control Systems	1, 2, PSO1, PSO2	3	-	-	3
6	21CSE02	Object Oriented Programming Lab	1,2,4,5	-	-	3	1.5
7	21EC405	Analog and Digital Communications Lab	1, 2, 4,5, PSO2	-	-	3	1.5
8	21ESX01	Employability Skills I	1,2,5,8,10,12	-	-	2	2
9	21HSX11	CC & EC Activities I	6,7,9,10	-	-	1	1
			Total	**15**	**0**	**11**	**22**
Fifth Semester							
1	21EC501	Linear and Digital IC Applications	1,2,3, PSO1	3	-	-	3
2	21EC502	Microprocessors and Microcontrollers	1, 2, 3, 4, 5, PSO1	3	-	2	4
3	21EC503	VLSI Design	1, 2,3, 4, 5, PSO1	3	-	2	4
4	21EC504	Antennas and Microwave Engineering	1,2,3, PSO2	3	-	-	3
5		Elective I (Professional Elective)		3	-	-	3
6		Elective II (Open Elective I)		3	-	-	3
7	21EC505	Linear IC Applications Lab	1,2,3, 4, PSO1	-	-	3	1.5
8	21TPX01	Term Paper	1,4,9,10,12,PSO1,PSO2	-	-	3	1.5
9	21ESX02	Employability Skills II	1,2,5,8,10,12	-	-	2	-
10	21HSX12	CC & EC Activities II	6,7,9,10	-	-	1	-
11	21SIX01	Summer Internship I	1,2,8,10,12	-	-	-	1
			Total	**18**	**0**	**13**	**24**
Sixth Semester							
1	21HSX10	Engineering Economics and Project Management	1,10,11,12	3	-	-	3
2	21EC601	Cellular and Mobile Communications	1,2,3, PSO2	3	-	-	3
3	21EC602	Digital Signal Processing	1,2, 3,PSO2	3	-	-	3
4		Elective III (Professional Elective)		3	-	2	4
5		Elective IV (Open Elective II)		3	-	-	3
6	21EC603	Digital Signal Processing Lab	1,2,4,5, PSO2	-	-	3	1.5
7	21MPX01	Mini Project	ALL	-	-	3	1.5
8	21ESX02	Employability Skills II	1,2,5,8,10,12	-	-	2	2
9	21HSX12	CC & EC Activities II	6,7,9,10	-	-	1	1
10	21ATX01	Environmental Studies	1,6,7,12	-	-	-	-
11	21ATX02	Human Values and Professional Ethics	----------	-	-	-	-

12	21ATX----	Audit Course	----------	-	-	-	-
			Total	**15**	**0**	**11**	**22**
Seventh Semester							
1	21PWX01	Project Work	ALL	-	-	16	8
2		Elective V (Professional Elective)		3	-	-	3
3		Elective VI (Professional Elective)		3	-	-	3
4		Elective VII (Open Elective III)		3	-	-	3
5	21SIX02	Summer Internship II	1,2,8,10,12	-	-	-	1
			Total	**9**	**0**	**16**	**18**
Eighth Semester							
1	21FIX01	Full Semester Internship (FSI)	1,2,5,8,9,10, PSO1, PSO2	-	-	**-**	8
2		Elective VIII (Professional Elective)		-	-	**-**	3
3		Elective IX (Open Elective IV)		-	-	**-**	3
			Total	**0**	**0**	**-**	**14**

List of Electives

Language Electives							
No.	**Course Code**	**Course**	**POs**	**Contact Hours**			
				L	**T**	**P**	**C**
1	21HSX03	Advanced Communicative English	9,10,12	2	-	-	2
2	21HSX04	Communicative German	10,12	2	-	-	2
3	21HSX05	Communicative French	10,12	2	-	-	2
4	21HSX06	Communicative Japanese	10,12	2	-	-	2
5	21HSX07	Communicative Spanish	10,12	2	-	-	2
6	21HSX08	Communicative Korean	10,12	2	-	-	2
7	21HSX09	Communicative Hindi	10,12	2	-	-	2
Elective I							
Career Path I, II, III and Other Core Electives							
1	21ECC11	RTL Coding Techniques (Chip Design Career Path)	1, 2, 3, PSO1	3	-	-	3
2	21ECC21	Data Acquisition System (Embedded System Design Career Path)	1, 2, 3,PSO1	3	-	-	3
3	21ECC31	Information Theory and Coding Techniques (Communication and Signal Processing)	1, 2, 3,PSO2	3	-	-	3
4	21IT304	Database Management Systems	1, 2, 3	3	-	-	3
5	21CS303	Data Structures	1, 2	3	-	-	3
6	21CS403	Computer Organization and Architecture	1,2	3	-	-	3
Elective III							
Career Path I, II, III and Other Core Electives							
1	21ECC12	ASIC Verification using system Verilog (Chip Design Career Path)	1, 2, 3,4,5, PSO1	3	-	2	4
2	21ECC22	Embedded System Design and IoT (Embedded System Design Career Path)	1, 2, 3, 4, 5, PSO1	3	-	2	4
3	21ECC32	Image processing (Communication and Signal Processing)	1, 2,4,5, PSO2	3	-	2	4
4	21EC004	Virtual Instrumentation	1, 2, 4, 5, PSO2	3	-	2	4
5	21EC005	Cryptography and Network Security	1, 3, 4, 5, PSO1	3	-	2	4
6	21CS503	Computer Networks	1,2,4,5,PSO1,PSO2	3	-	2	4
Elective V							
Career Path I, II, III and Other Core Electives							
1	21ECC13	Analog and mixed signal VLSI design (Chip Design Career Path)	1, 2, 3, PSO1	3	-	-	3
2	21ECC23	Real Time Operating Systems (Embedded System Design Career Path)	1,2, 3,PSO1	3	-	-	3
3	21ECC33	Multimedia communications (Communication and Signal Processing)	1, 2, 3,PSO2	3	-	-	3
4	21EC006	Wireless Sensor Networks	1, 2, PSO1, PSO2	3	-	-	3
5	21IT403	Operating Systems	1, 12	3	-	-	3
6	21CS603	Software Engineering	4, 5, 8, 11, PSO1	3	-	-	3
Elective VI							
1	21EC007	Design for testability	1, 2, 3, PSO1	3	-	-	3
2	21EC008	Biomedical Signal Processing	1,2, 3,PSO2	3	-	-	3
3	21EC009	UHF and EHF communication systems	1, 2,3, PSO2	3	-	-	3

Comment [E1]: Approved in 18th ACM

Comment [E2]: Approved in 18th ACM

Comment [E3]: Approved in 18th ACM

Comment [E4]: Approved in 18th ACM

4	21EC010	Neural Networks and Deep Learning	1, 2, PSO1, PSO2	3	-	-	3
Elective VIII (Professional Elective)							
1	21EC012	Real-Time Systems Design and Analysis	1, 2, 3,PSO1	-	-	-	3
2	21EC013	Image Processing for Engineering Applications	1, 2, 3,PSO2	-	-	-	3
3	21EC014	Computer Architecture	1, 2,3, PSO1	-	-	-	3
Open Electives							
1	21CE001	Disaster Management	2,7	3	-	-	3
2	21EE001	Electrical Installation, Safety and Auditing	2,3,6,8	3	-	-	3
3	21ME001	Fundamentals of Optimization Techniques	1,2,3,5	3	-	-	3
4	21EC001	Sensors for Engineering Applications	1,2,6,7	3	-	-	3
5	21CS001	Fundamentals of Artificial Intelligence	1,2,3	3	-	-	3
6	21CH001	Energy Conversion and Storage Devices	1,3,6,7	3	-	-	3
7	21IT001	Fundamentals of Multimedia	3,5,7	3	-	-	3
8	21BS001	Nano Materials and Technology	1,12	3	-	-	3
9	21DS001	Fundamentals of Data Science	1,2	3	-	-	3
10	21CE002	Air Pollution and Environmental Impact Assessment	6,7,12	3	-	-	3
11	21EE002	Renewable Energy Sources	2,7	3	-	-	3
12	21ME002	Principles of Entrepreneurship	1,5,8,11	3	-	-	3
13	21EC002	Electronics for Agriculture	1,2,6,7	3	-	-	3
14	21CS002	Fundamentals of Machine Learning	2,5	3	-	-	3
15	21CH002	Industrial Safety and Hazard Management	1,2,3,6,8	3	-	-	3
16	21IT002	Fundamentals of Cloud Computing	2,6,7,8,12	3	-	-	3
17	21BS002	Advanced Numerical Techniques	1,2	3	-	-	3
18	21BS003	Functional Materials and Applications	1,7	3	-	-	3
19	21CE003	Solid Waste Management	3,7,12	3	-	-	3
20	21EE003	Fundamentals of Electrical Vehicle Technology	2,3,12	3	-	-	3
21	21ME003	Industrial Engineering and Management	1,11	3	-	-	3
22	21EC003	Interfacing and Programming with Arduino	1,2,3,6	3	-	-	3
21	21CS003	Data Science for Engineering Applications	2,3,4	3	-	-	3
24	21CH003	Industrial Ecology for Sustainable Development	2,6,7	3	-	-	3
25	21IT003	Fundamentals of Mobile Computing	1,7	3	-	-	3
26	21BS004	Advanced Materials of Renewable Energy	1,7	3	-	-	3
27	21BS005	Applied Linear Algebra for Engineers	1,12	3	-	-	3
28	21CE019	Green Buildings	1,7,12	3	-	-	3
29	21EE017	Sustainable Energy	2,3,12	3	-	-	3
30	21ME019	Total Quality Management	1,11	3	-	-	3
31	21EC011	Communication Technologies	1,2,3,6	3	-	-	3
32	21CS020	Applications of Artificial Intelligence	2,3,6,7	3	-	-	3
33	21CH016	Green Technologies	2,6,7	3	-	-	3
34	21IT015	Human Computer Interaction	1,7	3	-	-	3
35	21BS006	Handling of Industrial waste and waste water	1,7	3	-	-	3
36	21OE001	Robotics and Automation	5,6,7	3	-	-	3
37	21OE002	Introduction to IoT	1,2	3	-	-	3
38	21OE003	Fundamentals of Image processing	1,2,3,6	3	-	-	3
39	21OE004	Fundamentals of Data Acquisition systems	1,2	3	-	-	3
40	21OE005	Airport Operations Management	2,4,11,12	3	-	-	3
41	21OE006	Fundamentals of Embedded Systems	1,2	3	-	-	3

Comment [E5]: Approved in 18th ACM

Comment [E6]: Approved in 18th ACM

42	21OE007	Remote Sensing and GIS	1,2,5,7,10	3	-	-	3
43	21OE008	Big Data Analytics	1,7	3	-	-	3
44	21OE009	Fundamentals of Cyber Security	3,6,8	3	-	-	3
45	21OE010	Smart Cities	7,12	3	-	-	3
46	21OE011	Nano Materials and Thin Film Technology	1,12				
47	21CSMC1	Cloud computing	2,3	3	-	-	3
48	21CSMC2	Ethical Hacking	1,2,3	3	-	-	3
49	21CSMC3	Fundamentals of Web Development	2,3,5	4	-	-	4
50	21OE012	Business Intelligence & Analytics	2,3,5	3	-	-	3
51	21OE013	Introduction To Industry 4.0 And Industrial IoT	2,3	3	-	-	3
52	21OE014	Natural Language Processing	2,3	3	-	-	3
Audit Course							
1	21AT001	Communication Etiquette in Workplaces	-	-	-	-	-
2	21AT002	Contemporary India: Economy, Policy and Society	-	-	-	-	-
3	21AT003	Design The Thinking	-	-	-	-	-
4	21AT004	Ethics and Integrity	-	-	-	-	-
5	21AT005	Indian Heritage and Culture	-	-	-	-	-
6	21AT006	Intellectual Property Rights and Patents	-	-	-	-	-
7	21AT007	Introduction to Journalism	-	-	-	-	-
8	21AT008	Mass Media Communication	-	-	-	-	-
9	21AT009	Science, Technology and Development	-	-	-	-	-
10	21AT010	Social Responsibility	-	-	-	-	-
11	21AT011	The Art of Photography and Film Making	-	-	-	-	-
12	21AT012	Gender Equality for Sustanibity	-	-	-	-	-
13	21AT013	Women in Leadership	-	-	-	-	-
14	21AT014	Introduction to Research Methodology	-	-	-	-	-
15	21AT015	Climate Change and Circular Economy	-	-	-	-	-
B. Tech. (Honors)							
Domain I VLSI Circuit Design and Verification							
01	21ECH11	System on Chip Design	1,2,PSO1	4	-	-	4
02	21ECH12	CMOS Logic Circuit Design	1, 2, 3, PSO1	4	-	-	4
03	21ECH13	Low Power VLSI Design	1, 2, 3, PSO1	4	-	-	4
04	21ECH14	VLSI Fabrication Technology	1,2,3, PSO1	4	-	-	4
Domain II Robotics and Automation							
01	21ECH21	Advanced Controllers	1, 2, 3, PSO1	4	-	-	4
02	21ECH22	Robots and Control	1, 2, 3, PSO1	4	-	-	4
03	21ECH23	Industrial Automation	1, 2, PSO1, PSO2	4	-	-	4
04	21ECH24	Distributed Embedded systems	1, 2, 3, PSO1	4	-	-	4
Domain III Cognitive Radio Networks							
01	21ECH31	Optical Communications	1, 2, PSO2	4	-	-	4
02	21ECH32	MIMO Wireless Communications	1,2,3, PSO2	4	-	-	4
03	21ECH33	Software Defined Radio	1, 2,PSO2	4	-	-	4
04	21ECH34	Wireless and Mobile Networks	1, 2, PSO1	4	-	-	4
Domain IV Multimedia Signal Processing							
01	21ECH41	Optimization Techniques	1, 2,PSO1, PSO2	4	-	-	4
02	21ECH42	Audio Signal Processing	1,2,3,PSO2	4	-	-	4
03	21ECH43	Statistical Signal Processing	1,2,3,PSO2	4	-	-	4
04	21ECH44	Computer Vision	1,2,PSO2	4	-	-	4
B. Tech. (Minors)							
Electronics and Communications Engineering							

01	21ECM01	Electronic Devices and Linear ICs		4	-	-	4
02	21ECM02	Fundamentals of Digital Signal Processing		4	-	-	4
03	21ECM03	Fundamentals of VLSI Design		4	-	-	4
04	21ECM04	Digital Design with Verilog		4	-	-	4
05	21ECM05	Principles of Communications		4	-	-	4

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GMR Institute of Technology
An Autonomous Institute Affiliated to JNTUK, Kakinada

GMRIT Training Tomorrow's Engineers Today

MINUTES OF THE 18th ACADEMIC COUNCIL MEETING

Media : Zoom (Online Meeting)
Date : 13.07.2022 (Wednesday)
Time : 03:00 PM – 05:00 PM

MEMBERS PRESENT

Dr. C. L. V. R. S. V. Prasad	-	Chairman (Principal)
Dr. KVSG Murali Krishna	-	Member
Dr. B. Bala Krishna	-	Member
Dr. R.Rajeswara Rao	-	Member
Dr. A.Venugopal	-	Member
Dr. K. V. L. Subramaniam	-	Member
Dr. P. Mallikarjuna Rao	-	Member
Dr. P. K. Jain	-	Member
Chair Person (BoS : Civil Engg.)	-	Member
Chair Person (BoS : EEE)	-	Member
Chair Person (BoS : Mech Engg.)	-	Member
Chair Person (BoS : ECE)	-	Member
Chair Person (BoS : CSE)	-	Member
Chair Person (BoS : Chem Engg.)	-	Member
Chair Person (BoS : IT)	-	Member
Chair Person (BoS : BS&H)	-	Member
Dr.S.N.Dash(CDC-Head)	-	Member
Dr.G.Sasi Kumar(Asso.Dean-Student Affairs)	-	Member
Dr.P.S.Venkata Narayana(Asso.Dean-R&D)	-	Member
Dr.T.Prabhakar (Controller of Examinations)	-	Member
Dr. L.Govinda Rao(IQAC Coordinator)	-	Member
Dr. M.V.Nageswara Rao(Asso.Dean-Academics)	-	Member Secretary

GRANT OF LEAVE OF ABSENCE

Mr. V. Paradesi Naidu	-	Member

Chairman welcomed all the members of the academic council and requested for the grant leave of absence for the above referred members. **(Item #1).**

Subsequently, the Chairman presented the action taken report for the 17th academic council meeting and received the confirmation for the minutes of 17th academic council meeting held on 11th Sep 2021 from all the esteemed members. **(Item #2&3).**

Chairman presented the details of the overall Operations and performance of the Institution (Academic-Operations, Ranking, Achievements, Placements and Research) **(Item #4)**.

Academic council members appreciated the efforts and initiatives taken up by the institute for the overall development and the ranking achieved. Congratulated the students who achieved credential in curricular and co-curricular activities.

ITEM No.: 5

Ratification of Semester end result for regular and supplementary examination for the academic year 2020-21(II, IV, VI semesters) and 2021-22 (I, III, VI, VII, VII, VIII semesters) held during September 2021 to July 2022 for Students in B. Tech. Programs.

Chairman presented the results declared for the regular and supplementary examinations pertaining to semesters mentioned above for the students admitted during the different academic years under Academic Regulation AR16, AR19, AR20 and AR 21 and requested for the ratification of the results which were declared by the College academic committee in the presence of the JNTUK representative.

The members after the detailed review, ratified the results of all the regular and supply examinations declared by the college academic committee as per the **Annexure I.**

ITEM No.: 6

Ratification of results of 2nd phase semester end exams for all the COVID-19 infected students during 2021-22.

Chairman presented the list of students infected with COVID-19 and could not appear for the 7th semester examinations. These students were permitted to appear in the 2nd phase as per the university directions considering it as a first attempt.

The members after the detailed review, ratified the Class and CGPA declared by the college academic committee as per the **Annexure II.**

ITEM No.: 7

Ratification of the PC eligibility list of the students admitted during the Academic Year 2018-19 and earlier batches who have successfully acquired the graduation requirements for the award of B. Tech. Degree as per the respective academic regulations at the time of admission.

Chairman presented the (semester-wise & branch-wise) results of the 2018 admitted batch for all the semesters' i.e from 1st to 8th semesters under Academic Regulation AR16 and who have acquired the graduation requirements and eligible for the issue of Provisional certificate. Further, details of the students who have acquired graduation requirements and eligible for the issue of PCs pertaining to the batches admitted earlier to 2018 are presented.

The members reviewed the results (1st semester to 8th semester) of 2018 admitted batch students and approved the PC eligibility list of the student who will be getting graduated by July 2022 as per the academic regulations AR16. Apart from this, the PC eligible students from the earlier admitted students who have acquired graduation requirements were also approved as per the **Annexure III.**

ITEM No.: 8

Ratification of the AR21 regulations for UG and PG programs that are approved by circulation wide the circulars dated 15-11-2021, 30-12-2021 & 30-03-2022 (In compliance with the JNTUK common guidelines)

Chairman presented the Academic Regulations 2021 (AR21) and Curriculum recommended by the respective BoS and which are in line with JNTUK common guidelines majorly in the context of incorporating the changes relate to the marks division between internal and External marks (30+70), Absolute grading in the place of Hybrid grading and Award of Class of degree (Division/Class) for UG and PG programs.

The members after deliberation ratified the Academic Regulations 2021 (AR21), Curriculum for UG and PG programs as per **Annexure IV &V.**

ITEM NO.:9

Approval of course structure, 3rd & 4th semesters syllabus for the new programs B.Tech CSE(AIML) and B.Tech CSE(AIDS) as per Academic Regulations 2021.

Chairman presented the recommendations of the Board of Studies CSE(AIDS) and CSE (AIML)) with regard to the course structure and detailed Syllabi for 3rd and 4th semesters as per AR21 for the B. Tech. (Regular), B. Tech. (Honors) and B. Tech (Minor) Programs for the ratification of Academic Council

Members after deliberation ratified the syllabi for the 3rd and 4th semesters as per the **Annexure VI & VII.**

ITEM NO.:10

Ratification of the syllabus for the 7th and 8th semesters as per AR19 and AR20 academic regulations

Chairman presented the recommendations of all the seven Board of Studies with regard to the detailed Syllabi for 7th and 8th semesters under the Academic Regulation AR 19 and AR 20 for the B. Tech. (Regular), B. Tech. (Honors) and B. Tech (Minor) Programs for the ratification of Academic Council

Members after deliberation ratified the syllabi for the 7th and 8th semesters as per the **Annexure VIII to XIV**

ITEM NO.:11

Ratification for readmitted students under transitory Regulations

As per the transitory regulations, with regard to the students re-admitted under, AR19/AR20 moving from AR16/AR19, Board of Studies of the respective departments discussed the issues case to case and recommended the substitute courses balancing the credit requirements. The details of the students are presented by the chairman before the council for formal ratification

Members ratified the recommendations of the respective BoS as per the **Annexure XV**

PRINCIPAL

Encl. (a) Annexure A (b) Annexure B (c) Annexure C (d) Annexure D

Copy to:

- All Members of the Academic Council
- Autonomous Coordinator (Institute Level)
- Assoc.Dean(Academics)
- Controller of Examinations (CoE)

- File

MINUTES OF THE 18th ACADEMIC COUNCIL MEETING

Annexure IV:
http://www.gmrit.org/Autonomy_Regulations_UGPrograms_2021.pdf

Annexure V:
http://www.gmrit.org/Autonomy_Regulations_PGPrograms_2021.pdf

Annexure VI:
http://www.gmrit.org/resources/CSE-AI&DS_Course_Structure.pdf

Annexure VII:
http://www.gmrit.org/resources/CSE-AI&ML_Course_structure.pdf

Annexure VIII: CIVIL Engineering
http://www.gmrit.org/resources/B.Tech_Civil_Syllabus_AR19.pdf
http://www.gmrit.org/resources/B.Tech_Civil_Syllabus_AR20.pdf

Annexure IX: CHEMIAL Engineering
http://www.gmrit.org/resources/B.Tech_Chem_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_Chem_Syllabus_AR19.pdf

Annexure X: Computer Science Engineering
http://www.gmrit.org/resources/B.Tech_CSE_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_CSE_Syllabus_AR19.pdf

Annexure XI: Information Technology
http://www.gmrit.org/resources/B.Tech_IT_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_IT_Syllabus_AR19.pdf

Annexure XII: Electronics and Communication Engineering
http://www.gmrit.org/resources/B.Tech_ECE_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_ECE_Syllabus_AR19.pdf

Annexure XIII: Electrical and Electronics Engineering
http://www.gmrit.org/resources/B.Tech_EEE_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_EEE_Syllabus_AR19.pdf

Annexure XIV: Electrical and Electronics Engineering
http://www.gmrit.org/resources/B.Tech_Mech_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_Mech_Syllabus_AR19.pdf

GMR Institute of Technology-Rajam

Department of Electronics and Communication Engineering

VISION

To be a preferred department of learning for students and teachers alike, with a commitment towards academics & research, serving the students in an atmosphere of innovation, critical thinking and making them industry ready.

MISSION

- To provide adaptable education in a collaborative and innovative environment in skilling the graduates to solve real world problems in the field of Electronics and communication Engineering
- To prepare the students as critical thinking professionals with multidisciplinary research orientation and Innovation
- To instill ethical values and nurture the graduates who will be able to contribute to the society

Program Educational objectives

- PEO1: Employ logical and analytical skills in solving complex real-world engineering problems in the areas of Electronics and communication Engineering and allied fields
- PEO2: Adaptable to emerging technologies with enhanced professional skills and ability towards continuous learning, facilitating higher studies and research
- PEO3: Demonstrate professional ethics, leadership qualities and promote inclusive and collaborative growth with human values towards societal interest.

Program Outcomes

Engineering graduate will be able to

PO 1: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.(Engineering knowledge)

PO 2: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.(Problem analysis)

PO 3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. (Design/development of solutions)

PO 4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.(Conduct investigations of complex problems)

PO 5: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.(Modern tool usage)

PO 6: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.(The engineer and society)

PO 7: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.(Environment and sustainability)

PO 8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.(Ethics)

PO 9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.(Individual and team work)

PO 10: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.(Communication)

PO 11: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.(Project management and finance)

PO 12: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.(Life-long learning)

PSO 1: Apply the knowledge of technological evolutions, model / characterize devices and design the integrated circuits to build analog and digital systems. (Program Specific)

PSO 2: Understand and apply the fundamentals of communication and signal processing to develop systems wrapped with industry standard protocols and standards. (Program Specific)

Department of Electronics and Communication Engineering

Minimum Credits to be earned: 160 (for Regular Students)

1st SEMESTER

Pattern-I - A to H Sections				**Pattern-II - I to P Sections**			
S. No.	**Course Code**	**Course Name**	**Credits**	**S. No.**	**Course Code**	**Course Name**	**Credits**
1	23PYX01	Engineering Physics	3	1	23CYX01 23CYX02	Chemistry (EEE, ECE, CSE, AIML, AIDS, IT) Engineering Chemistry (CE, ME)	3
2	23MAX01	Linear Algebra& Calculus	3	2	23MAX01	Linear Algebra& Calculus	3
3	23BEX01	Basic Electrical and Electronics Engineering	3	3	23BEX02	Basic Civil & Mechanical Engineering	3
4	23BEX03	Introduction to Programming	3	4	23BEX03	Introduction to Programming	3
5	23BEX04	Engineering Graphics	3	5	23HSX01	Communicative English	2
6	23PYX02	Engineering Physics Lab	1	6	23CYX03 23CYX04	Chemistry Lab (EEE, ECE, CSE, AIML, AIDS, IT) Engineering Chemistry Lab (CE, ME)	1
7	23BEX05	Electrical & Electronics Engineering Workshop	1.5	7	23BEX06	Engineering Workshop	1.5
8	23BEX07	Computer Programming Lab	1.5	8	23BEX07	Computer Programming Lab	1.5
9	23BEX08	IT Workshop	1	9	23HSX02	Communicative English Lab	1
				10	23HSX11	ECA (Yoga / Sports)	0.5
				11	23HSX12	CCA (NSS/NCC/Community Service)	0.5
		Total	**20**			**Total**	**20**

2nd SEMESTER

Pattern-I - A to H Sections				Pattern-II - I to P Sections			
S. No.	**Course Code**	**Course Name**	**Credits**	**S. No.**	**Course Code**	**Course Name**	**Credits**
1	23CYX01 23CYX02	Chemistry (EEE, ECE, CSE, AIML, AIDS, IT) Engineering Chemistry (CE, ME)	3	1	23PYX01	Engineering Physics	3
2	23MAX02	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS	3	2	23MAX02	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS	3
3	23BEX02	Basic Civil & Mechanical Engineering	3	3	23BEX01	Basic Electrical and Electronics Engineering	3
4	23ME201 23CS201 23EE201 23EC201 (Branch Specific Theory)	Engineering Mechanics (Civil, Mech) ; Data Structures (CSE, CSE-AI&DS, CSE-AI&ML, IT) ; Electrical Circuit Analysis-1 (EEE); Network Analysis (ECE);	3	4	23ME201 23CS201 23EE201 23EC201 (Branch Specific Theory)	Engineering Mechanics (Civil, Mech) ; Data Structures (CSE, CSE-AI&DS, CSE-AI&ML, IT) ; Electrical Circuit Analysis-1 (EEE); Network Analysis (ECE);	3
5	23HSX01	Communicative English	2	5	23BEX04	Engineering Graphics	3
6	23CYX03 23CYX04	Chemistry Lab (EEE, ECE, CSE, AIML, AIDS, IT) Engineering Chemistry Lab (CE, ME)	1	6	23PYX02	Engineering Physics Lab	1
7	23BEX06	Engineering Workshop	1.5	7	23BEX05	Electrical & Electronics Engineering Workshop	1.5
8	23CE201 23CS202 23EE202 23EC202 23ME202 (Branch Specific Lab)	Engineering Mechanics and Building Practices Lab (Civil); Data Structures Lab (CSE, CSE-AI&DS, CSE-AI&ML, IT); Electrical Circuits Lab (EEE); Network Analysis Lab (ECE); Engineering Mechanics Lab (Mech);	1.5	8	23CE201 23CS202 23EE202 23EC202 23ME202 (Branch Specific Lab)	Engineering Mechanics and Building Practices Lab (Civil); Data Structures Lab (CSE, CSE-AI&DS, CSE-AI&ML, IT); Electrical Circuits Lab(EEE); Network Analysis Lab(ECE); Engineering Mechanics Lab (Mech);	1.5
9	23HSX02	Communicative English Lab	1	9	23BEX08	IT Workshop	1
10	23HSX11	ECA (Yoga / Sports)	0.5				
11	23HSX12	CCA (NSS/NCC/Community Service)	0.5				
		Total	**20**			**Total**	**20**

No	Course Code	Course	POs	Contact Hours			
				L	T	P	C
Third Semester							
1	23MA301	Complex Variables	1, 2,3,4,PSO2	3	-	-	3
2	23EC301	Electronic Devices and Circuits	1,2,3,4,PSO1	3	-	-	3
3	23EC302	Python Programming	1,2, 4,5	3	-	2	4
4	23EC303	Logic Circuit Design	1,2, 3,4,PSO1	3	-	-	3
5	23EC304	Random Variables and Stochastic Processes	1,2,3,4, PSO2	3	-	-	3
6	23EC305	Signals & Systems	1,2,3,4,5, PSO2	3	-	2	4
7	23EC306	Electronic Devices and Circuits Lab	1, 2,3, 4, PSO1	-	-	3	1.5
8	23EC307	Logic Circuit Design Lab	1, 2, 3,4, 5, PSO1	-	-	3	1.5
9	23ESX01	Employability Skills I	1,2,3,5,8,10,12	-	-	2	--
		Audit course					--
			Total	**18**	**0**	**13**	**23**
Fourth Semester							
1	23CSE01	Object Oriented Programming	1,2, 3,4,5	3	-	-	3
2	23EC401	Analog and Digital Communications	1,2, 3,4,PSO2	3	-	-	3
3	23EC402	Analog Electronic Circuits	1, 2, 4,5, PSO1	3	-	2	4
4	23EC403	Electromagnetic Waves & Transmission Lines	1,2,3, 4,PSO2	3	-	-	3
5	23EC404	Linear Control Systems	1, 2, 3,PSO1, PSO2	3	-	-	3
6	23CSE02	Object Oriented Programming Lab	1,2,3,4,5	-	-	3	1.5
7	23EC405	Analog and Digital Communications Lab	1, 2, 3,4,5, PSO2	-	-	3	1.5
8	23ESX01	Employability Skills I	1,2,5,8,10,12	-	-	2	2
			Total	**15**	**0**	**10**	**21**
Fifth Semester							
1	23EC501	Linear and Digital IC Applications	1,2, 3,4,5,PSO1	3	-	-	3
2	23EC502	Microprocessors and Microcontrollers	1, 2, 3, 4, 5, PSO1	3	-	2	4
3	23EC503	VLSI Design	1, 2,3, 4, 5, PSO1	3	-	2	4
4	23EC504	Antennas and Microwave Engineering	1,2, 3,4,PSO2	3	-	-	3
5		Elective I (Professional Elective)		3	-	-	3
6		Elective II (Open Elective I)		3	-	-	3
7	23EC505	Linear IC Applications Lab	1,2,3, 4, PSO1	-	-	3	1.5
8	23TPX01	Term Paper	1,4,9,10,12,PSO1,PSO2	-	-	3	1.5
9	23ESX02	Employability Skills II	1,2,5,8,10,12	-	-	2	--
10	23SIX01	Summer Internship I	1,2,8,10,12	-	-	-	1
			Total	**18**	**0**	**13**	**24**
Sixth Semester							
1	23HSX10	Engineering Economics and Project Management	1,2,10,11,12	3	-	-	3
2	23EC601	Cellular and Mobile Communications	1,2, 3,4,PSO2	3	-	-	3
3	23EC602	Digital Signal Processing	1,2, 3,4,PSO2	3	-	-	3

4		Elective III (Professional Elective)		3	-	2	4
5		Elective IV (Open Elective II)		3	-	-	3
6	23EC603	Digital Signal Processing Lab	1,2,4,5, PSO2	-	-	3	1.5
7	23 MPX01	Mini Project	ALL	-	-	3	1.5
8	23ESX02	Employability Skills II	1,2,5,8,10,12	-	-	2	2
9	23ATX01	Environmental Studies	1,6,7,12	-	-	-	-
10	23ATX02	Human Values and Professional Ethics	----------	-	-	-	-
11	23ATX----	Audit Course	----------	-	-	-	-
			Total	**15**	**0**	**11**	**21**
Seventh Semester							
1	23PWX01	Project Work	ALL	-	-	16	8
2		Elective V (Professional Elective)		3	-	-	3
3		Elective VI (Professional Elective)		3	-	-	3
4		Elective VII (Open Elective III)		3	-	-	3
5	23SIX02	Summer Internship II	1,2,8,10,12	-	-	-	1
			Total	**9**	**0**	**16**	**18**
Eighth Semester							
1	23FIX01	Full Semester Internship (FSI)	1,2,5,8,9,10, PSO1, PSO2	-	-	-	8
2		Elective VIII (Professional Elective)		-	-	-	3
3		Elective IX (Open Elective IV)		-	-	-	2
			Total	**0**	**0**	**-**	**13**

List of Electives

No.	Course Code	Course	POs	Contact Hours			
				L	T	P	C
Language Electives							
1	23HSX03	Advanced Communicative English	1,9,10,11,12	2	-	-	2
2	23HSX04	Communicative German	6,9,10,11,12	2	-	-	2
3	23HSX05	Communicative French	6,9,10,11,12	2	-	-	2
4	23HSX06	Communicative Japanese		2	-	-	2
5	23HSX07	Communicative Spanish		2	-	-	2
6	23HSX08	Communicative Korean		2	-	-	2
7	23HSX09	Communicative Hindi	6,9,10,11,12	2	-	-	2
Elective I							
Career Path I, II, III and Other Core Electives							
1	23ECC11	RTL Coding Techniques (Chip Design Career Path)	1, 2, 3,4, PSO1	3	-	-	3
2	23ECC21	IoT Architecture and Protocols (Embedded System Design Career Path)	1, 2, 3,6,7,8,PSO1,PSO_2	3	-	-	3
3	23ECC31	Coding Theory and Techniques (Advanced Communications)	1, 2, 3,4,PSO2	3	-	-	3
4	23IT304	Database Management Systems	1, 2, 3,12,PSO_2	3	-	-	3
5	23CS303	Data Structures	1, 2,PO_{12}	3	-	-	3
6	23CS403	Computer Organization and Architecture	1,2, PO_{12},PSO_1	3	-	-	3
		MOOCs		-	-	-	3
Elective III							
Career Path I, II, III and Other Core Electives							
1	23ECC12	System Verilog for Verification (Chip Design Career Path)	1, 2, 3,4,5, PSO1	3	-	2	4
2	23ECC22	Embedded System Design and ARM Processor (Embedded System Design Career Path)	1, 2, 3, 4, 5, PSO1	3	-	2	4
3	23ECC32	Principles of MIMO-OFDM Communications (Advanced Communications)	1, 2,4,5, PSO2	3	-	2	4
4	23EC004	Virtual Instrumentation	1, 2, 4, 5, PSO2	3	-	2	4
5	23EC005	Cryptography and Network Security	1, 3, 4, 5, PSO1	3	-	2	4
6	23CS503	Computer Networks	1,2,4,5,PSO1,PSO2	3	-	2	4
		MOOCs		-	-	-	3
Elective V							
Career Path I, II, III and Other Core Electives							
1	23ECC13	VLSI Physical Design with Timing Analysis (Chip Design Career Path)	1, 2, 3, PSO1	3	-	-	3
2	23ECC23	Real Time Operating Systems (Embedded System Design Career Path)	1,2, 3,PSO1	3	-	-	3
3	23ECC33	5G Communications (Advanced Communications)	1, 2, 3,7,PSO2	3	-	-	3
4	23EC006	Wireless Sensor Networks	1, 2, 3,4,PSO1, PSO2	3	-	-	3
5	23IT403	Operating Systems	1, 12	3	-	-	3
6	23CS603	Software Engineering	4, 5, 8, 11, PSO1	3	-	-	3
		MOOCs		-	-	-	3
Elective VI							

Comment [E1]: Approved in 20th ACM

Comment [E2]: Approved in 20th ACM

Comment [E3]: Approved in 20th ACM

Comment [E4]: Approved in 20th ACM

1	23EC007	Design for testability	1, 2, 3, PSO1	3	-	-	3
2	23EC008	Biomedical Signal Processing	1, 2, 3,PSO2	3	-	-	3
3	23EC009	Digital Image Processing	1, 2, 3,PSO2	3	-	-	3
4	23EC010	Neural Networks and Deep Learning	1, 2, PSO1, PSO2	3	-	-	3
		MOOCs		-	-	-	3
Elective VIII (Professional Elective)							
1	23EC012	Real-Time Systems Design and Analysis	1, 2, 3,PSO1	-	-	-	3
2	23EC013	UHF and EHF communication systems	1, 2, 3,4,PSO2	-	-	-	3
3	23EC014	Computer Architecture	1, 2, 3,PSO1	-	-	-	3

Comment [E5]: Approved in 20th ACM

List of Sequential Open Electives Subjects

Comment [E6]: Approved in 16th BOS

Domain-1: Data Science (Syllabus in Page Number from 2 to 7)

Domain-2: Machine Learning (Syllabus in Page Number from 8 to 15)

Domain-3: Aeronautical Engineering) (Syllabus in Page Number from 16 to 21)

S.No.	Semester/Year		Subject Code	Subject Title	L T P C
Open Elective-1					
1	5th / 3rd	23O0401	Domain-1	Principles of Data Science	3 0 0 3
2	5th / 3rd	23O0411	Domain-2	Fundamentals of Machine Learning	3 0 0 3
3	5th / 3rd	23O0421	Domain-3	Aerodynamics, Flight Controls and Aircraft Systems	3 0 0 3
Open Elective-2					
1	6th / 3rd	23O0402	Domain-1	Data Science for Engineering Applications	3 0 0 3
2	6th / 3rd	23O0412	Domain-2	Deep Learning	3 0 0 3
3	6th / 3rd	23O0422	Domain-3	Aircraft Materials and Structures	3 0 0 3
Open Elective-3					
1	7th / 4th	23O0403	Domain-1	Computer Vision	3 0 0 3
2	7th / 4th	23O0413	Domain-2	Reinforcement Learning	3 0 0 3
3	7th / 4th	23O0423	Domain-3	Aircraft Gas Turbine Engines	3 0 0 3
Open Elective-4					
1	8th / 4th	23O0404	Domain-1	Deep Learning for Computer Vision	3 0 0 3
2	8th / 4th	23O0414	Domain-2	Affective Computing	3 0 0 3
3	7th / 4th	23O0424	Domain-3	Avionics Systems	3 0 0 3

MINUTES OF THE 20th ACADEMIC COUNCIL MEETING

Media : Zoom (Online Meeting)
Date : 15.06.2024 (Saturday)
Time : 03:00 PM – 05:00 PM

MEMBERS PRESENT

Dr. C. L. V. R. S. V. Prasad	-	Chairman (Principal)
Dr. D. Rajya Lakshmi	-	Member
Mr.B.Chandra Bhushana Rao	-	Member
Dr. G. Jayasuma	-	Member
Dr. A. Venu Gopal	-	Member
Dr. P. Mallikarjuna Rao	-	Member
Dr. P. K. Jain	-	Member
Chair Person (BoS : Civil Engg.)	-	Member
Chair Person (BoS : EEE)	-	Member
Chair Person (BoS : Chem &Mech Engg.)	-	Member
Chair Person (BoS : ECE)	-	Member
Chair Person (BoS : CSE)	-	Member
Chair Person (BoS : IT)	-	Member
Chair Person (BoS : BS&H)	-	Member
Chair Person (BoS : AIML,AIDS)	-	Member
Dr.S.N.Dash(CDC-Head)	-	Member
Dr.V.Rambabu (Asso.Dean-Student Affairs)	-	Member
Dr. K.Ravindranadh (Asso.Dean-R&D)	-	Member
Dr.T.Prabhakar (Controller of Examinations)	-	Member
Dr.P.N.L.Pavani (Head -IQAC)	-	Member
Dr. M.V.Nageswara Rao(Asso.Dean-Academics)	-	Member Secretary

GRANT OF LEAVE OF ABSENCE

Dr. K. V. L. Subramaniam	-	Member
Mr. V. Paradesi Naidu	-	Member

Chairman welcomed all the members of the academic council and requested for the grant leave of absence for the above referred members. **(Item #1).**

Member Secretary presented the action taken report for the 19th academic council meeting and received the confirmation for the minutes of 19th academic council meeting held on 06th June 2023 from all the esteemed members.

Also presented the action taken report for the approvals taken by circulation on 20.11.2023 and received the confirmation from all the esteemed members. **(Item #2 &3).**

Member Secretary presented the details of the overall Operations and performance of the Institution (Academic-Operations, Ranking, Achievements, Placements and Research) **(Item #4).**

Academic council members appreciated the efforts and initiatives taken up by the institute for the overall development and the ranking achieved. Congratulated the students who achieved credential in curricular and co-curricular activities.

ITEM No.: 5

Ratification of Semester end result for regular and supplementary examination for the academic year 2023-24 (II, IV, VI, VIII semesters) and 2023-24 (I, III, V, VII semesters) held during June 2023 to June 2024 for Students in B. Tech. and M.Tech Programs.

Member Secretary presented the results declared for the regular and supplementary examinations pertaining to semesters mentioned above for the students admitted during the different academic years under Academic Regulation AR16, AR19, AR20, AR21 and AR 23 and requested for the ratification of the results which were declared by the College academic committee in the presence of the JNTUGV representative.

- The members, after the detailed review, ratified the results of all the regular and supply examinations declared by the college academic committee as per the **Annexure I.**

ITEM No.: 6

Ratification of the PC eligibility list of the UG students admitted during the Academic Year 2020-21 & earlier batches who have successfully acquired the graduation requirements for the award of B. Tech. Degree with Honours , B.Tech. Degree with Minors in Computer Science and Engineering , and B.Tech. Degree as per the respective academic regulations at the time of admission.

Ratification of the PC eligibility list of the PG students admitted during the Academic Year 2021-2022 who have successfully acquired the graduation requirements for the award of M.Tech. Degree as per the respective academic regulations at the time of admission.

Member Secretary presented the (semester-wise & branch-wise) UG results of the 2020 admitted batch for all the semesters i.e from 1st to 8th semesters under Academic Regulation AR20 and who have acquired the graduation requirements and eligible for the issue of Provisional certificate.
Further, details of the students who have acquired graduation requirements and eligible for the issue of PCs pertaining to the batches admitted earlier to 2020 are presented.

The members reviewed the results (1st semester to 8th semester) of 2020 admitted batch students and approved the PC eligibility list of the student who will be graduating by June 2024 as per the academic regulations AR20. Apart from this, the PC eligible students from the earlier admitted students who have acquired graduation requirements were also approved as per the **Annexure II.**

Member Secretary also presented the (semester-wise & Specialisation-wise) results PG students admitted in the academic year 2021-22 for all the semesters' i.e from 1st to 4th semesters and who have fulfilled the M.Tech requirements and eligible for the issue of Provisional certificate.

The members reviewed the results (1st semester to 4th semester) of 2021 admitted batch PG students and approved the PC eligibility list of the students who will be graduating by June 2024 as per the **Annexure II.**

ITEM NO.:7

Ratification of the syllabus for the 7th & 8th semesters of CSE-AIML & CSE-AIDS as per AR21 academic regulations

HOD-CSE presented the recommendations of the Board of Studies (meeting held on 16th March 2024) of CSE-(Artificial Intelligence and Machine Learning) and CSE-(Artificial Intelligence and Data Science) regarding the detailed Syllabi for 7th & 8th semesters for AR21 regulations B. Tech. (Regular), B. Tech. (Honors) and B. Tech (Minor) Programs requesting for the ratification from the members of Academic Council

Members after deliberation ratified the syllabi for the 7th and 8th semesters as per the **Annexure III.**

ITEM NO.:08

Approval of the AR-23 Academic Regulations for 3rd, 4th, 5th, 6th ,7th and 8th semesters.

The member secretary presented the detailed course structure and syllabus from III to VIII semesters of AR23 regulations. The syllabus and course structure of I and II semesters are in line with the common guidelines suggested by JNTUGV.

However, keeping in view the following points related the JNTUGV suggested course structure:

1. More academic load during 7th semester (21 credits)
2. Mandated FSI during 8th semester for all the students
3. No clear separation of credits for project work and FSI in 8th semester
4. Suggested FSI through online/virtual mode

All the respective BoS have recommended implementing the course structure of III to VIII semesters of AR21 which was Approved and ratified by AC during the meeting dated 13th July 2022 with the following changes to have credit balance.

- CC&EC activities which were available from III to VI semesters are removed as CC&EC activities were already pursued in the I and II semesters.
- One credit is reduced in the Open Elective of VIII semester
- Minor modifications in the syllabus in a few courses.

Members deliberated and ratified the course structure and syllabus for AR23 regulations as recommended by the respective BoS for all the eight UG programs. Details are attached in **Annexure-IV**

PRINCIPAL

GMR INSTITUTE OF TECHNOLOGY ★ RAJAM ★

Encl. Annexure I to IV

Copy to:

- All Members of the Academic Council
- Assoc.Dean(Academics)
- Controller of Examinations (CoE)
- File

PC Eligibility for
B.Tech Degree with Minors in Computer Science and Engineering

S.No	Department	Registered	Eligible for B.Tech Degree with Minors in Computer Science and Engineering
1	Civil Engineering	13	9
2	Electrical and Electronics Engineering	10	10
3	Mechanical Engineering	9	9
4	Electronics and Communication Engineering	30	26
5	Chemical Engineering	3	2
	Total	65	56

PC Eligibility - PG Students 2021 Admitted Batch

S.No.	Admitted Batch	PC Eligible Students	Eligibility Academic Year
1	2021 Admitted Batch	08	2023-24

Annexure – III

Syllabus for 7th & 8th semesters of CSE-AIML & CSE-AIDS

https://gmrit.edu.in/PDFs/curriculum/B.Tech_AIDS_Syllabus_AR21.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_AIML_Syllabus_AR21.pdf

Annexure – III

Academic Regulations (AR-23) for 3rd, 4th, 5th, 6th ,7th and 8th semesters

https://gmrit.edu.in/PDFs/curriculum/B.Tech_AIDS_Syllabus_AR23.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_AIML_Syllabus_AR23.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_Civil_Syllabus_AR23.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_EEE_Syllabus_AR23.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_CSE_Syllabus_AR23.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_ECE_Syllabus_AR23.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_Mech_Syllabus_AR23.pdf

https://gmrit.edu.in/PDFs/curriculum/B.Tech_IT_Syllabus_AR23.pdf

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

16th Board of Studies: 24.02.2025 (Monday)

Minutes of the Meeting

No	Points Discussed	ATR
1	BoS Chairman welcomed all the members of BoS and presented the revision of Vision, Mission, PEOs and PSOs of the department, Revision of CO-PO mapping of all the courses - AR21 and AR23,	
2	Presented the finalization of course titles and content of Sequential Open Electives for B.Tech-5th to 8th semesters, 2023 admitted batch (AR-23) and approved as per the below list **Domain-1: Data Science** Principles of Data Science Data Science For Engineering Applications Computer Vision Deep Learning For Computer Vision **Domain-2: Machine Learning** Fundamentals of Machine Learning Deep Learning Reinforcement Learning Affective Computing **Domain-3: Industrial Safety Engineering (NEBOSH)** Principles of Safety Management Occupational Health and Industrial Hygiene Fire Engineering Electrical Safety **Domain-4: Aeronautical Engineering**	

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

16th Board of Studies: 24.02.2025 (Monday)

Minutes of the Meeting

	Aerodynamics and Flight Controls Aircraft Materials and Structures Aircraft Gas Turbine Engines Avionics And Safety Systems **VLSI Design: For EEE students** Fundamentals of VLSI design Digital Design with Verilog Verification Using System Verilog VLSI Design Flow: RTL to GDS	
	Presented the finalization of course titles and content of Career Path Electives for B.Tech- 5th to 8th semesters, 2023 admitted batch (AR-23) **Career Path-1: Chip Design** RTL Coding Techniques System Verilog for Verification Physical Design with Timing Analysis **Career Path-2: Embedded System Design** IoT Architectures and Protocols Embedded System Design and ARM Processor Real Time Operating Systems **Career Path-3:Communication and Signal Processing** Coding Theory and Techniques Principles of MIMO-OFDM Communications 5G Communications Suggested the Career path -3 title as Advanced Communications	

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

16th Board of Studies: 24.02.2025 (Monday)

Minutes of the Meeting

4	**23ECC31 Coding Theory and Techniques (Advanced Communications Career Path):** Suggested to include the Advanced coding techniques such as LDPC and Turbo codes in this course	
5	21EC009 UHF and EHF Communication Systems (Elective VI) 7th semester in AR21 is shifted to Elective VIII in 8th Semester in AR23 with changed code 23EC013	
6	21EC013 Image Processing for Engineering Applications in 8th semester of AR21 is removed. 23EC009 Digital Image Processing is added in Professional elective VI in AR23. Presented the syllabus of Digital Image Processing and approved.	
7	Presented the ratification of substitute courses for readmitted students (i) Mr. SASUBILLI UMA MAHESH bearing JNTU No. 20341A04G2 Readmitted in 8th Semester (FSI) will study 20EC016 Big Data Analytics – Open Elective Subject. (ii) Mr. SAMANTHULA MANIKIRAN bearing JNTU No. 20341A04F8 Readmitted in 8th Semester (FSI) will study 20EC017 Fundamentals of Cyber Security – Open Elective Subject.	

Dr. V. Jagan Naveen	Dr. P.K Sahu	Dr.P.Srihari Rao	Dr.Ch.Srinivasa Rao	Mr.Vikram Naidu Marapu	Mr. M Lolugu Madan
Chairman-BoS	Member-BoS	Member-BoS	Member-BoS	Member-BoS	Member-BoS

Curriculum
2021

M. Tech.
VLSI and Embedded system Design

(Duration of Study : 2 years)

Department of Electronics and Communication Engineering
GMR Institute of Technology
Rajam, Andhra Pradesh
(An Autonomous Institute Affiliated to JNTU Kakinada, AP)
NBA Accredited and NAAC Accredited

Department of Electronics and Communication EngineeringVLSI and Embedded system Design

[Minimum Credits to be earned: 68]

First Semester						
No	**Course Code**	**Course**	**Periods**			
			L	**T**	**P**	**C**
1	21MEX101	Advanced Optimization Techniques	4	-	-	4
2	21VLS101	VLSI Technology and Design	4	-	-	4
3		Elective I	4	-	-	4
4		Elective II	4	-	-	4
5		Elective III	4	-	-	4
6	21VLS102	HDL Programming Laboratory	-	-	3	1.5
7	21VLS103	Term Paper	-	-	3	1.5
		Total	20	-	6	23
Second Semester						
1	21VLS201	Embedded and Real Time Systems	4	-	-	4
2	21VLS202	Algorithms for VLSI Design Automation	4	-	-	4
3		Elective IV	4	-	-	4
4		Elective V	4	-	-	4
5		Elective VI	4	-	-	4
6	21VLS203	Embedded systems Laboratory	-	-	3	1.5
7	21VLS204	IC Implementation Laboratory	-	-	3	1.5
		Total	20	-	6	23
Third Semester						
No	**Course Code**	**Course**	**Periods**			
			L	**T**	**P**	**C**
1	21VLS301	Internship	-	-	-	4
2	21VLS302	Project	-	-	-	-
3		Research Methodology and IPR (Audit Course)	-	-	-	0
		Total	-	-	-	4
Fourth Semester						
1	21VLS302	Project	-	-	-	18

List of Elective Courses

No	Course Code	Course	Periods			
			L	T	P	C
Elective I						
1	21VLS001	Analog and Digital IC Design	4	-	-	4
2	21VLS002	Digital Design through VERILOG	4	-	-	4
3	21VLS003	Embedded Software Design	4	-	-	4
Elective II						
1	21VLS004	Advanced Microcontrollers and Processors	4	-	-	4
2	21VLS005	DSP Processors and Architectures	4	-	-	4
3	21VLS006	VLSI Signal Processing	4	-	-	4
Elective III						
1	21VLS007	Embedded System Design	4	-	-	4
2	21VLS008	System Verilog Programming for Verification	4	-	-	4
3	21VLS009	IoT system Design	4	-	-	4
Elective IV						
1	21VLS010	Design of Fault Tolerant System	4	-	-	4
2	21VLS011	Embedded Networking	4	-	-	4
3	21VLS012	Low Power VLSI Design	4	-	-	4
Elective V						
1	21VLS013	CPLD and FPGA Architectures & Applications	4	-	-	4
2	21VLS014	Hardware Software Co-design	4	-	-	4
3	21VLS015	System Modeling & Simulation	4	-	-	4
Elective VI						
1	21CSE203	Soft Computing Techniques	4	-	-	4
2	21VLS016	Memory Architectures	4	-	-	4
3	21VLS017	Programming Languages for Embedded Systems	4	-	-	4

Comment [E1]: Approved in 18th ACM

Comment [E2]: Approved in 18th ACM

Comment [E3]: Approved in 18th ACM

Comment [E4]: Approved in 18th ACM

Comment [E5]: Approved in 18th ACM

Comment [E6]: Approved in 18th ACM

GMR Institute of Technology
An Autonomous Institute Affiliated to JNTUK, Kakinada

GMRIT Training Tomorrow's Engineers Today

MINUTES OF THE 18th ACADEMIC COUNCIL MEETING

Media : Zoom (Online Meeting)
Date : 13.07.2022 (Wednesday)
Time : 03:00 PM – 05:00 PM

MEMBERS PRESENT

Dr. C. L. V. R. S. V. Prasad	-	Chairman (Principal)
Dr. KVSG Murali Krishna	-	Member
Dr. B. Bala Krishna	-	Member
Dr. R.Rajeswara Rao	-	Member
Dr. A.Venugopal	-	Member
Dr. K. V. L. Subramaniam	-	Member
Dr. P. Mallikarjuna Rao	-	Member
Dr. P. K. Jain	-	Member
Chair Person (BoS : Civil Engg.)	-	Member
Chair Person (BoS : EEE)	-	Member
Chair Person (BoS : Mech Engg.)	-	Member
Chair Person (BoS : ECE)	-	Member
Chair Person (BoS : CSE)	-	Member
Chair Person (BoS : Chem Engg.)	-	Member
Chair Person (BoS : IT)	-	Member
Chair Person (BoS : BS&H)	-	Member
Dr.S.N.Dash(CDC-Head)	-	Member
Dr.G.Sasi Kumar(Asso.Dean-Student Affairs)	-	Member
Dr.P.S.Venkata Narayana(Asso.Dean-R&D)	-	Member
Dr.T.Prabhakar (Controller of Examinations)	-	Member
Dr. L.Govinda Rao(IQAC Coordinator)	-	Member
Dr. M.V.Nageswara Rao(Asso.Dean-Academics)	-	Member Secretary

GRANT OF LEAVE OF ABSENCE

Mr. V. Paradesi Naidu	-	Member

Chairman welcomed all the members of the academic council and requested for the grant leave of absence for the above referred members. **(Item #1).**

Subsequently, the Chairman presented the action taken report for the 17th academic council meeting and received the confirmation for the minutes of 17th academic council meeting held on 11th Sep 2021 from all the esteemed members. **(Item #2&3).**

Chairman presented the details of the overall Operations and performance of the Institution (Academic-Operations, Ranking, Achievements, Placements and Research) **(Item #4)**.

Academic council members appreciated the efforts and initiatives taken up by the institute for the overall development and the ranking achieved. Congratulated the students who achieved credential in curricular and co-curricular activities.

ITEM No.: 5

Ratification of Semester end result for regular and supplementary examination for the academic year 2020-21(II, IV, VI semesters) and 2021-22 (I, III, VI, VII, VII, VIII semesters) held during September 2021 to July 2022 for Students in B. Tech. Programs.

Chairman presented the results declared for the regular and supplementary examinations pertaining to semesters mentioned above for the students admitted during the different academic years under Academic Regulation AR16, AR19, AR20 and AR 21 and requested for the ratification of the results which were declared by the College academic committee in the presence of the JNTUK representative.

The members after the detailed review, ratified the results of all the regular and supply examinations declared by the college academic committee as per the **Annexure I.**

ITEM No.: 6

Ratification of results of 2nd phase semester end exams for all the COVID-19 infected students during 2021-22.

Chairman presented the list of students infected with COVID-19 and could not appear for the 7th semester examinations. These students were permitted to appear in the 2nd phase as per the university directions considering it as a first attempt.

The members after the detailed review, ratified the Class and CGPA declared by the college academic committee as per the **Annexure II.**

ITEM No.: 7

Ratification of the PC eligibility list of the students admitted during the Academic Year 2018-19 and earlier batches who have successfully acquired the graduation requirements for the award of B. Tech. Degree as per the respective academic regulations at the time of admission.

Chairman presented the (semester-wise & branch-wise) results of the 2018 admitted batch for all the semesters' i.e from 1st to 8th semesters under Academic Regulation AR16 and who have acquired the graduation requirements and eligible for the issue of Provisional certificate. Further, details of the students who have acquired graduation requirements and eligible for the issue of PCs pertaining to the batches admitted earlier to 2018 are presented.

The members reviewed the results (1st semester to 8th semester) of 2018 admitted batch students and approved the PC eligibility list of the student who will be getting graduated by July 2022 as per the academic regulations AR16. Apart from this, the PC eligible students from the earlier admitted students who have acquired graduation requirements were also approved as per the **Annexure III.**

ITEM No.: 8

Ratification of the AR21 regulations for UG and PG programs that are approved by circulation wide the circulars dated 15-11-2021, 30-12-2021 & 30-03-2022 (In compliance with the JNTUK common guidelines)

Chairman presented the Academic Regulations 2021 (AR21) and Curriculum recommended by the respective BoS and which are in line with JNTUK common guidelines majorly in the context of incorporating the changes relate to the marks division between internal and External marks (30+70), Absolute grading in the place of Hybrid grading and Award of Class of degree (Division/Class) for UG and PG programs.

The members after deliberation ratified the Academic Regulations 2021 (AR21), Curriculum for UG and PG programs as per **Annexure IV &V.**

ITEM NO.:9

Approval of course structure, 3rd & 4th semesters syllabus for the new programs B.Tech CSE(AIML) and B.Tech CSE(AIDS) as per Academic Regulations 2021.

Chairman presented the recommendations of the Board of Studies CSE(AIDS) and CSE (AIML)) with regard to the course structure and detailed Syllabi for 3rd and 4th semesters as per AR21 for the B. Tech. (Regular), B. Tech. (Honors) and B. Tech (Minor) Programs for the ratification of Academic Council

Members after deliberation ratified the syllabi for the 3rd and 4th semesters as per the **Annexure VI & VII.**

ITEM NO.:10

Ratification of the syllabus for the 7th and 8th semesters as per AR19 and AR20 academic regulations

Chairman presented the recommendations of all the seven Board of Studies with regard to the detailed Syllabi for 7th and 8th semesters under the Academic Regulation AR 19 and AR 20 for the B. Tech. (Regular), B. Tech. (Honors) and B. Tech (Minor) Programs for the ratification of Academic Council

Members after deliberation ratified the syllabi for the 7th and 8th semesters as per the **Annexure VIII to XIV**

ITEM NO.:11

Ratification for readmitted students under transitory Regulations

As per the transitory regulations, with regard to the students re-admitted under, AR19/AR20 moving from AR16/AR19, Board of Studies of the respective departments discussed the issues case to case and recommended the substitute courses balancing the credit requirements. The details of the students are presented by the chairman before the council for formal ratification

Members ratified the recommendations of the respective BoS as per the **Annexure XV**

PRINCIPAL

Encl. (a) Annexure A (b) Annexure B (c) Annexure C (d) Annexure D

Copy to:

- All Members of the Academic Council
- Autonomous Coordinator (Institute Level)
- Assoc.Dean(Academics)
- Controller of Examinations (CoE)

- File

MINUTES OF THE 18th ACADEMIC COUNCIL MEETING

Annexure IV:
http://www.gmrit.org/Autonomy_Regulations_UGPrograms_2021.pdf

Annexure V:
http://www.gmrit.org/Autonomy_Regulations_PGPrograms_2021.pdf

Annexure VI:
http://www.gmrit.org/resources/CSE-AI&DS_Course_Structure.pdf

Annexure VII:
http://www.gmrit.org/resources/CSE-AI&ML_Course_structure.pdf

Annexure VIII: CIVIL Engineering
http://www.gmrit.org/resources/B.Tech_Civil_Syllabus_AR19.pdf
http://www.gmrit.org/resources/B.Tech_Civil_Syllabus_AR20.pdf

Annexure IX: CHEMIAL Engineering
http://www.gmrit.org/resources/B.Tech_Chem_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_Chem_Syllabus_AR19.pdf

Annexure X: Computer Science Engineering
http://www.gmrit.org/resources/B.Tech_CSE_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_CSE_Syllabus_AR19.pdf

Annexure XI: Information Technology
http://www.gmrit.org/resources/B.Tech_IT_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_IT_Syllabus_AR19.pdf

Annexure XII: Electronics and Communication Engineering
http://www.gmrit.org/resources/B.Tech_ECE_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_ECE_Syllabus_AR19.pdf

Annexure XIII: Electrical and Electronics Engineering
http://www.gmrit.org/resources/B.Tech_EEE_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_EEE_Syllabus_AR19.pdf

Annexure XIV: Electrical and Electronics Engineering
http://www.gmrit.org/resources/B.Tech_Mech_Syllabus_AR20.pdf
http://www.gmrit.org/resources/B.Tech_Mech_Syllabus_AR19.pdf