RV Educational Institutions
RV College of Engineering
Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi
Approved by AICTE, New Delhi

MEETING NO:36 DATE: THURSDAY, 20, 2023

ACADEMIC COUNCIL MEETING

Sl. No.	Structure	Name	SIGNATURE
1	Principal (Chairman)	Dr. K.N. Subramanya Principal, RVCE	
	All the Heads of Departments in the college	Dr. B. Sathish Babu HoD, Artificial Intelligence and Machine Learning	
2		Dr. R.S. Kulkarni HOD, Aerospace Engg.	20.07.23
3		Dr. Vidya Niranjan HOD, Biotechnology	20/7/23
4		Dr. Vinod Kallur HOD, Chemical Engg.	20.7.23
5		Dr. Radhakrishna HOD, Civil Engg.	20/7/23
6		Dr. P. Ramakanth Kumar HOD, Computer Science & Engg.	20/7/23
7		Dr. Dr. S. G. Srivani I/N HOD, Electrical & Electronics Engg.	20/7/23
8		Dr. H. V. Ravish Aradhya I/N HOD, Electronics & Communication Engg.	
9		Dr. C.H. Renumadhavi HOD, Electronics & Instrumentation Engg.	20/7/23
10		Dr. C.K. Nagendra Guptha HOD, Industrial Engineering & Management	20/7/23
11		Dr. B.M. Sagar HOD, Information Science & Engg.	20/7/23
12		Dr. M. Krishna HOD, Mechanical Engg.	
13		Dr. Andhe Dharani Director, MCA	20/7/2023
14		Dr. K. Sreelakshmi HOD, Telecommunication Engg. (Electronics and)	
15		Dr. Sudha Kamath HOD, Physics	LOA
16		Dr. Raviraj Kusanur HOD, Chemistry	20/7/23
17		Dr. G. Jayalatha. I/N HOD, Mathematics	20/7/2023
18		Dr. N.S. Narahari Chairperson, HSS Board	20/7/2023
19		Dr. G. Sadashivappa Controller of Examinations	20.07.23
20		Dr. B.V. Uma Dean (Student Affairs) & Professor, ECE Dept.	B.V. 20/7/23

Sl. No.	Structure	Name	SIGNATURE
21	Four teachers of the college representing different categories of teaching staff by rotation on the basis of seniority of service in the college.	Dr. K.S. Geetha Vice Principal, RVCE	Geetha.
22		Dr. Minal Moharir Professor, CS Dept.	LOA
23		Dr. Promio Charles F Associate Professor, AS Dept.	LOA
24		Dr. R Sridhar Associate Professor, ME Dept.	LOA
25	Not less than four experts/academicians from outside the college representing such areas as Industry, Commerce, Law, Education, Medicine, Engineering, Sciences etc., to be nominated by the Governing Body.	Dr. M.H. Kori, Retd. Technical Director, Alcatel Lucent Technologies	LOA
26		Prof. Kavi Mahesh Director, IIIT-Dharwad	LOA
27		Dr. M. Mathiarajan Chief Research Scientist, Dept. of Management Studies Indian Institute of Science, Bengaluru.	LOA
28		Dr. Rajashekhar Malur Chief Technology Officer, TATA Consulting Engineers Ltd. Bengaluru.	LOA
29	Three nominees of the university not less than Professors.	Dr. M.S. Shivakumar EC Member-VTU Former VC-CMR University, No. 1270, 4th cross, Paduvana Road, TK Layout, Kuvempunagar, Mysuru-23. M: 99720 31655 e-mail: msskumar50@gmail.com	
30		Dr. Martin Jebraj No. 306/24, 4th Floor, 7th Main Road, Lakkasandra Ext. Audugodi Post, Bengaluru-560030. M: 9880339507 / 8618490544 Email: kmartin8181@yahoo.co.in	
31		Dr. Prasad B Rampure Principal, KLE College of Engineering, Banantikodi Road, Chikkodi, Belagavi-591201. M: 9980705776 e-mail: rampureprasad@gmail.com	LOA
32	A faculty member nominated by the Principal (Member Secretary).	Dr. Shanmukha Nagaraj Member Secretary & Dean Academics	20/07

INVITEES			
Sl. No.	**NAME**	**DEPARTMENT**	**SIGNATURE**
1.	Dr. G-SHREESHA	Physics	G Shreesha
2.	Dr. Renuka Devi. M.V	Civil	Renuka
3.	Dr. Rajashree Shettar	CSE	Rajashree
4.	Dr. NAGARAJA. L.S	CSE	L.S. Nagaraja
5.	Dr. C Bindu Ashwini	HSS	
6.	Dr. G.S. Mamatha	ISE	
7.	Dr. Rajeswara Rao KVS	IEM	
8.	Dr AVNARAYAN	BT	
9.	Gopalakrishna	ME	
10.	Dr. Kumaraswamy H.V	ETE	
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RV College of Engineering, Bengaluru-59.

Proceedings of 36th Academic Council Meeting held on 20th Jul. 2023

Members Present:

1. Dr. K.N. Subramanya – Chairperson	18. Dr. Anantharama V – Dy. CoE
2. Dr. K.S. Geetha – Vice Principal	19. Dr. G. Jayalatha – I/c. HoD, MAT
3. Dr. R.S. Kulkarni – HoD, ASE	20. Dr. N.S. Narahari – IEM
4. Dr. B. Satish Babu – HoD, AI&ML	21. Dr. KVS Rajeshwara Rao – IEM
5. Dr. Vidya Niranjan – HoD, BT	22. Dr. B. Renuka Prasad – MCA
6. Dr. Vinod Kallur – HoD, CH	23. Dr. G. Shireesha – PHY
7. Dr. P. Ramakanth Kumar – HoD, CSE	24. Dr. M.V. Renukadevi – CV
8. Dr. Radhakrishna – HoD, CV	25. Dr. Rajashree Shettar – CSE
9. Dr. Ravish Aradhya – I/c. HoD, ECE	26. Dr. H.D. Gopalakrishna – ME
10. Dr. S.G. Srivani – I/c. HoD, EEE	27. Dr. G.S. Nagaraja – CSE
11. Dr. C.H. Renumadhavi – HoD, EIE	28. Dr. G.S. Mamatha – ISE
12. Dr. K. Sreelakshmi – HoD, ETE	29. Dr. A.V. Narayan - BT
13. Dr. B.M. Sagar – HoD, ISE	30. Dr. H.V. Kumaraswamy - ETE
14. Dr. C.K. Nagendra Gupta – HoD, IEM	31. Dr. G. Sadashivappa - CoE
15. Dr. M. Krishna – HoD, ME	32. Dr. B.V. Uma – Dean (SA)
16. Dr. Andhe Dharani – Director, MCA	33. Dr. Ravindra R - CV
17. Dr. Raviraj Kusanur – HoD, CHY	34. Dr. Shanmukha Nagaraj – Member Secretary

External Members:

1) Dr. M.S. Shivakumar – Former VC, CMR University - VTU Nominee	2) Dr. Martin Jebraj – Former Principal, Dr. AIT, Bengaluru – VTU Nominee

Leave of Absence:

1) Dr. Kavi Mahesh, IIIT-Dharwad
2) Dr. Rajshekara Malur, TCE, B'luru.
3) Dr. M. Mathirajan – Professor, IISc.
4) Dr. M.K. Sudha Kamath – HoD, PHY
5) Dr. M.H. Kori – Former Tech. Dir., Alcatel-Lucent Technologies.
6) Dr. Prasad B Rampure, Principal, KLE College of Engg., Chikkodi, Belagavi. – VTU nominee

The Chairman welcomed all the members.

***Sub. No. 291*: To read and record proceedings of the 35th Academic Council Meeting held on 03.1.2023 & Action Taken Report.**

The Chairman briefed the members about the proceedings of 35th Academic Council Meeting held on 03.1.2023 and Action Taken Report thereon. Since no comments were raised. the proceedings and action taken report were read and recorded.

The Chairman informed the Council that VTU has nominated new members to the Academic Council and he thanked all the outgoing VTU nominees. He further briefed that, Dr. B. Ramprasad Rampure – VTU nominee could not attend today's meeting due to pre-occupation with other work.

Outgoing Nominees	
1) Dr. H.S. Prabhakara, Dean – Operations, Navkis College of Engineering, Hassan. **2) Dr. K.P. Shivananda,** Principal, Siddaganga Institute of Technology, Tumkur **3) Dr. Mallikarjunayya C. Math,** Assoc. Prof., Dept. of Thermal Power Engg., VTU-PG Centre, Mysore. ***(Expired)***	We place on record their active participation and the suggestions given to improve the system and enhance quality education and research in the institution, during their tenure.

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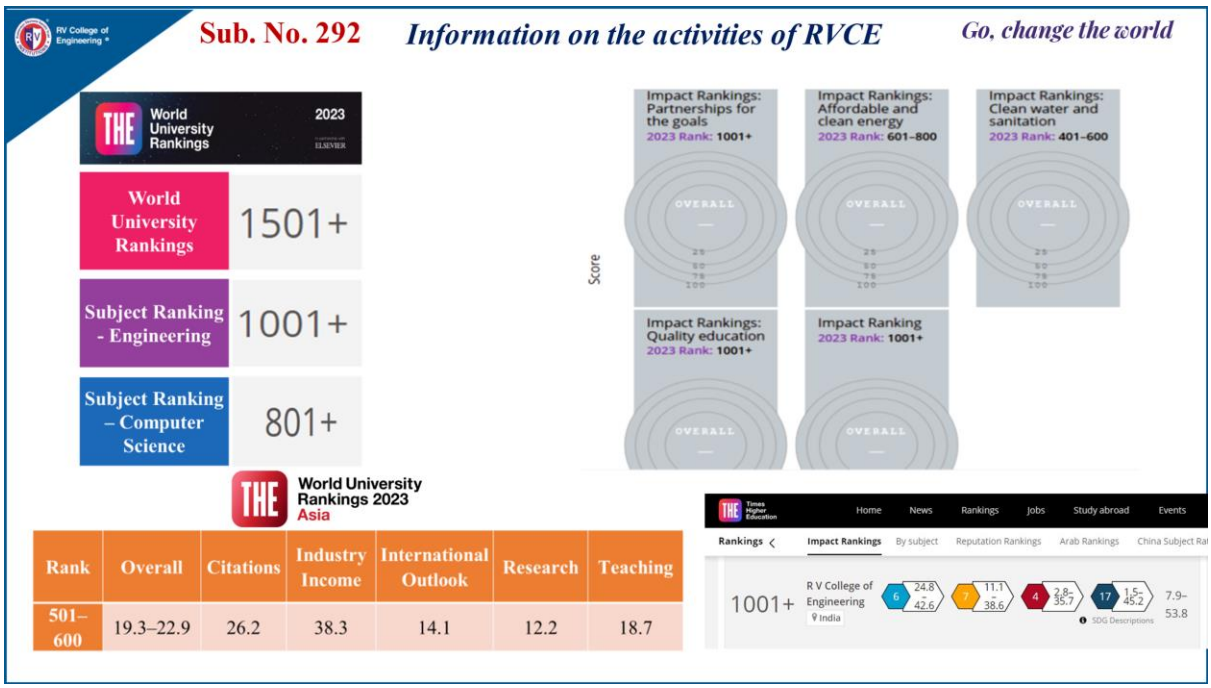
Proceedings of 36th Academic Council Meeting held on 20th Jul. 2023

New Nominees
1) Dr. M.S. Shivakumar, EC Member-VTU, Former VC-CMR University, Bengaluru
2) Dr. Martin Jebraj, Ex Principal, Dr. Ambedkar Institute of Technology, Bengaluru.
3) Dr. Prasad B Rampure, Principal, KLE College of Engineering, Chikkodi, Belagavi.

Sub. No. 292: Information on the activities of RVCE.

The Chairman appraised the members about various activities carried out in the institution since Jan. 2023 to till date, through a presentation.



RV College of Engineering, Bengaluru-59.

Proceedings of 36th Academic Council Meeting held on 20th Jul. 2023

Sub. No. 292 — *Information on the activities of RVCE* — *Go, change the world*

Media / Magazine Rankings 2023

NATIONAL INSTITUTIONAL RANKING FRAMEWORK - 2023

96

(Engineering Stream)

NIRF - YEAR WISE DETAILS		
Year	2022	2023
Total Score	40.73	42.22
Overall Rank	89	96
TLR	71	68
RPC	88	93
GO	80	81
OI	84	87
PR	67	63
No. of colleges participated	1249	1314
Percentage	7.12	7.3

Sub. No. 292 — *Information on the activities of RVCE* — *Go, change the world*

Media / Magazine Rankings 2023

Received NCC Best Institution award of Karnataka and Goa directorate for the year 2023

RVCE NPTEL local chapter is rated as AAA for Jan -Apr 2023 semester.

Local Chapter stands 1st in Karnataka and in 3rd position out of top 100 colleges.

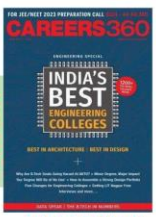
Sub. No. 292 — *Information on the activities of RVCE* — *Go, change the world*

Media / Magazine Rankings 2023

Apr. 2023

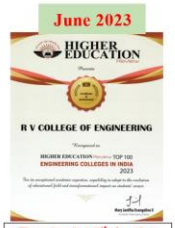
Category	Rank
Top 10 Private Engineering Colleges in the Country	6
Private Engineering Colleges in Karnataka	1
Competence of Faculty	7
Curriculum & Pedagogy (digital readiness)	7
Placements	8
Industry Interface	9
Infrastructure	8
Research & Innovation	6
Leadership / Governance Quality	8
Faculty Welfare & Development	8
Value for Money	8

April 2023



AAAA+ Grade

June 2023

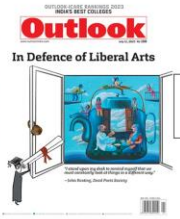


Ranked 18th in the Country

18 June, 2023

Category	Rank
Engineering Colleges in the Country	33
Private Engineering Colleges (All India)	10
Private Engineering Colleges (South Zone)	8
Private Engineering Colleges (Bengaluru)	3

11 Jul. 2023



Ranked 9th in the Country (among 160 Top Pvt. Institutions)

RV College of Engineering, Bengaluru-59.

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Sub. No. 292 ***Information on the activities of RVCE***

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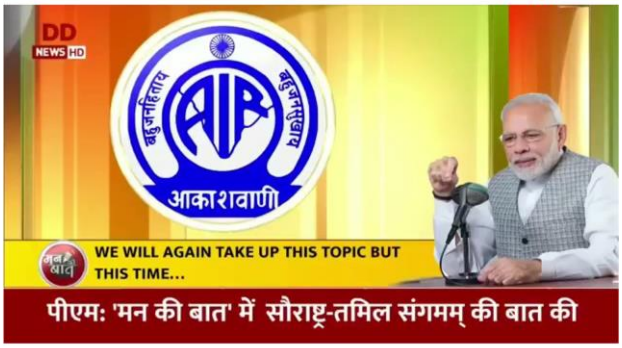
Prime Minister Narendra Modi spoke about FluxGen in 28th May 2023 Mann Ki Baat (मन की बात) episode.

Alumni Ganesh Shankar of TCE started this startup.



Sub. No. 292 ***Information on the activities of RVCE***

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Student / Alumni Achievements

UPSC (Civil Services Mains) Results-2022
RVCE – UG Alumni

Shravan Kumar
Rank - 222
EEE Dept.

Vinay K S
Rank - 741
Mech. Engg. – 2014

Sub. No. 292 ***Information on the activities of RVCE***

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Increase & Reduction in intake of UG Programs for the Academic Year 2023-24

UG Programs	Increase in Intake (2023-24)	Total Intake
B.E in Computer Science & Engineering	60	285*
B.E in Information Science & Engineering	60	135*
B.E in Artificial Intelligence & Machine Learning	60	120

***AICTE Additional Intake (as per Chapter VII, Clause 7.53 of APH-2022-23)**
A number of institutes have reported >80% enrolments. Extra capacities shall be permitted to institutions with good NIRF ranking (<100) that have reported >80% enrolments last three years as below:
i) 95-100% enrolments – additional capacity of 25% be permitted
ii) 80-95% enrolments – additional capacity of 15% may be permitted

Reduction in intake of UG Program from the AY 2023-24

Civil Engineering	120 to 60

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Sub. No. 292 NBA Accreditation Details – 2022 -23

Undergraduate Programs

Program	Accreditation
Computer Science & Engg.	Academic Year 2022-23 to 2027-28 i.e. upto 30-06-2028
Electronics & CommunicationEngg.	
Biotechnology	
Mechanical Engg.	
Chemical Engineering	
Civil Engineering	Academic Year 2022-23 to 2024-25 i.e. upto 30-06-2025
Electronics & Telecommunication Engineering	

Postgraduate Programs – M.Tech

Program	Accreditation
Information Technology	Academic Year 2023-24 to 2025-26 i.e. upto 30-06-2026
Power Electronics	
Software Engineering	Academic Year 2022-23 to 2024-25 i.e. upto 30-06-2025

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Sub. No. 292 Activities of RVCE (Jan. 2023-till date)

Sl. No.	Particulars	
1	Research / Consultancy project proposals submitted	47 / 13,13,75,028
2	Project grants received	13 / 43,73,491
3	Training / consultancy activities	51/ 59,17,851
4	Workshops / Seminars / Conference / Events Organized	45
5	Invited talks delivered by faculty	44
6	Expert Lectures organized by the depts.	24
7	No. of workshops / Seminars / Conferences / Online Webinars attended by Faculty/ Staff:	92
8	Journal Publications by Faculty (National / International)	01 / 69
9	Conference Publications by Faculty(National /International)	01 & 28
10	Book published/chapter authored by faculty	0 / 07
11	MoUs / MoA signed	07
12	Patent Filed / Published / Granted	3 / 1 / 3

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Faculty Achievements / Recognitions

Year	Faculty	Achievement / Recognition
2023	Dr. Mahesh A	Outstanding Medium Student Branch Counselor by IEEE Bangalore Section
	Dr. Shylashree N	Certificate of Appreciation in recognition of notable contributions, commitments & exemplary services to IEEE CAS - IEEE Circuits & Systems Society (CAS) Bangalore Chapter
	Raghavendra Prasad S G	IEEE Bangalore Section Outstanding Volunteer Award – 2022
	Dr. M Lokeshwari	Certified as Trainer with Grade A for training the qualification pack of Small Hydro Power Plant Technician – under Jal Urja Mitra Programme (SCJ/Q0604), confirming to national Skill Qualification Framework level 4, by National Skill Development Corporation
	Dr. M Lokeshwari	"Saarthaka Mahile" Award for social service on occasion of international women's day by NGO- Smaana Manaska Sevakaru, Ranjani Kala Kendra Bengaluru.
	Dr Arunkumar P Chavan	Best paper presenter Award- IEEE CCWC March 2023
	Dr. Padmashree T	Certified Block chain expert by Block Chain Council
	Dr. K Natarajan	Lifetime Achievement Award in recognition of outstanding contributions to academic discipline by Ramfo R K Foundation. Vellore, TN
	Dr.Usha Rani K R	Contribution towards Research Publications in Conferences and Journals-Oct2021--Sep.2022 by IEEE ComSoc -Protsahana Award

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List of faculty acquired Ph.D. from Feb. 23– Jul. 2023

S. No.	NAME	DESGN	DEPT	UNIVERSITY	MONTH	YEAR	SPECIALIZATION
1	Sailaja Y	Asst. Prof	MATHS	VTU	February	2023	Complex Analysis
2	Nagaraju P	Asso. Prof	E&TE	VTU	June	2023	Telecommunication
3	Jyoti Shetty	Asst. Prof	CSE	VTU	February	2023	Data Mining & Cloud Computing
4	Prapulla S B	Asst. Prof	CSE	VTU	May	2023	Wireless Sensor Networks
5	Mahantesh M Math	Asst. Prof	MECH	VTU	February	2023	Ergonomics
6	Keshav M	Asst. Prof	MECH	VTU	June	2023	Computer Integrated Manufacturing
7	Sujatha Hiremath	Asst. Prof	E&C	VTU	February	2023	VLSI
8	Arun Kumar P Chavan	Asst. Prof	E&C	VTU	February	2023	Vlsi & Embedded System
9	Dr Vinutha Moses	Asst. Prof	CHEMICAL	VTU	June	2023	Chemical Engineering
10	Aiovuthu Shree Madhuri	Asst. Prof.	E&C	Koneru Lakshmaiah Education Foundation	May	2023	Communication
11	Girish Kumar R	Asst. Prof.	ME	VTU	June	2023	Product Design and Manufacturing

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Community Service

Jal Urja Mitra Skill Development Programme

Small Hydro Power Plant Technician (Jal Urja Mitra)

RVCE –Training Center ID - TC135628

Sponsored by:
Ministry of New and Renewable Energy, Govt. of India

Managed by:
Dept of Hydro and Renewable Energy, I IT Roorkee

Two Faculty Certified as Trainer with Grade A
ID - TR145977: Dr. Madhu B R &
ID- TR264233 - Dr. M Lokeshwari

Job Role:
Small Hydro Power operation and maintenance training for 30 candidates, from Electrical, Civil and Mechanical background, completed Diploma, ITI and PUC, selected through news paper, Radio, web site and other media advertisement.

Green Jobs: Small Hydro Power Plant Technician (Jal Urja Mitra) (SGJ/Q0604)
Amount Sanctioned : 20Lakhs for one Batch, 15th March – 15th June 2023

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Leadership Development Programmes

GROW

(Get Ready for Opportunities at Work)

RV Educational Excellence -Nurture Future Leaders Program

As the management was very keen on developing second level leadership skills among the competent and interested faculty members of RVCE, the Program called "**GROW**" (*Get Ready for Opportunities@ Work*) was launched on 04.04.2022. The selection process comprises of Evaluation of Synopsys, Psychometric Tests and an Expert Interview Process. Ten selected faculty members were inducted to undergo a yearlong training to get themselves familiarized with the intricacies of the prevailing processes.

Process familiarization at
RVCE, RVEI, RVIC (SAP-ERP) &
Branding & Media Communications
Leadership Trainings
Institutional Visits
Industrial Visits
Assessments
Certification Course


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Dr. Sridhar R
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GROW Activities

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01 Process Familiarization
Exposure to Internal Processes at RVEI

02 Visits to Premier Institutions
Infosys, Mysuru, KIET, Bhubaneshwar & NIT Suratkal

03 Leadership Training
Technical Sessions by Eminent Leaders: Toyota& Outbound Program

04 Industry Visits
Toyota, Wendt India, Volvo

05 Quarterly Assessments
Reporting, Presentations, One-on-One Assessment

06 Finishing School
Certification from RVU & induct when need arises.

Administration
Campus Facility Management
Human Resource Management
Financial Management
Procurement Process
ERP-SAP

Student Life-Cycle Management
Admission Process
Academics
Examination Evaluation System
Placement Process
Finishing School

Research & Development
Funded Research
Consultancy
Patenting Process
Startups

Strategic Planning & Networking
Strategic Planning
Statutory Compliance
Alumni Releations
Branding & Media Communications

International Collaboration

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Academic and research collaboration - signed between RV College of Engineering, Bangalore, India and Rosenheim Technical University of Applied Sciences, Germany, on 30.5.2023

1. Prof. Dr. Ing. Martin Versen-Dean Faculty of Engineering.
2. Prof. Dr. Nataraj J R- Associate Professor of RV College of Engineering, India
3. Prof. Dr. h.c Heinrich Koster- President of Rosenheim Technical University of Applied Sciences, Germany.
4. Mrs. Olga Schloss - Manager University Relations, Bavarian-Indian Center of Business and University Cooperation

1. Mr. Florian Thoma, M.A.Project Coordinator International Technology Studies @ TH Rosenheim
2. Ms. Sibylle Möbius, M.A.-Head of International Office
3. Prof. Dr. Nataraj J R- Associate Professor of RV College of Engineering
4. Mrs. Olga Schloss - Manager University Relations, Bavarian-Indian Center of Business and University Cooperation
5. Prof. Dr. h.c Heinrich Koster- President of Rosenheim Technical University of Applied Sciences, Germany.

International Visit / Collaboration

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- Attending Summer School "Regional Sustainability: Smart Systems and Supply" from 25th Aug. to 1st Sept. 2023 @ University of Dortmund, Germany
  - a) Dr. K.N. Subramanya, Principal- RVCE
  - b) Ms. Anika Vishwas, 6th Sem. IEM Dept.
  - c) Ms. Devika Mariyappa, 6th Mech. Engg.
- Summer School is organized by the DAAD / BMBF funded project InduTwin (Industrial Twin Bachelor Program, 2019-2023).
- The costs for flight and accommodation will be covered by the project InduTwin.

- It is proposed that 10 faculty members of RVCE including Principal, are planning to attend 2nd International Roboticist Forum at Technical University of Applied Sciences Würzburg-Schweinfurt, from 20th – 24th Nov. 2023.
- The visit is proposed to be sponsored by Sustainability Fund of the institution which has been recommended in the Finance Committee Meeting.
- Robotics experts and presidents from seven international partner universities will be invited to Roboticist Forum.
- During the visit, further enhancing collaboration activities will be discussed.

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Centres of Excellence for Interdisciplinary Research

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01	CoE in Macroelectronics
02	CoE in Internet of Things (CISCO-RVCE)
03	CoE in e-Mobility
04	Centre for Education & Digital Learning Research (CEDLR)
05	CoE in Smart Antenna Systems & Measurements (SAS)
06	CoE Computational Genomics
07	Center for Automation and Robotics
08	Centre for Quantum Computing
09	Logistics & Supply Chain Management
10	Centre for Hydrogen and Green Technology
11	Centre for CCTV Research
12	CoE in Cognitive Intelligent Systems for Sustainable Solutions
13	Women in Cloud : Center of Excellence In India
14	Centre for AI Research and Business Solutions
15	Centre for Visual Computing
16	Sensors & Sensors Application Technology
17	Autonomous Vehicles (WIRIN)
18	Integrated Circuits & Systems

Centres of Competence for Skill Development

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01	RV - MB Centre for Automotive Mechatronics
02	Bosch Rexroth - RVCE Centre of Competence in Automation
03	Centre for Automation and Robotics (Digital Manufacturing)
04	Centre for Nano Materials and Devices
05	Centre for 5G and Emerging Wireless Technologies
06	RVCE-Morris Garage Centre for Electric Vehicle Technologies
07	Centre of Competence in Advanced Automotive Systems [Decibels]
08	RVCE-Toyota Kirloskar Motor Centre of Excellence in Automotive Engineering

Centres of Excellence / Competencies

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Centre for Integrated Circuits & Systems

The Centre promotes a coherent programme of training which will enhance the skill set of young designers in the specified areas with academia - industry collaboration in India and abroad

- **Expertise**

RF IC Design
Analog IC Design
Digital IC Design
Mixed Signal IC Design

- **Facilities**

Licensed CADENCE Tool (full suit)

Centre for 5G and Emerging Wireless Technologies

The center aims at enhancing knowledge and skill through training. The center focuses on undertaking interdisciplinary research projects through collaboration with industry and research organizations. c

The center is supported by MODROB AICTE under the title, Modernization of Advanced RF and Wireless Communication Laboratory with full-fledged testing and characterization of the passive and active circuits for 5G and Allied technologies with a sanctioned amount of Rs.15,97,650.

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Centres of Excellence / Competencies

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Centre for Sensor Technology and Applications

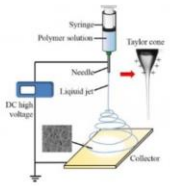
The CSTA was launched to suffice the need for sensors and automation in robotics, agriculture, biomedical, IoT, AI & ML.

- **Expertise**

Sensors Fabrication
Design Thinking
Sensors Integration
Iot and IIOT

- **Facilities**

Analog / Digital Sensors
Thin Films & Coatings
Actuators - Linear / Rotary
Processor / Controller



Centre of Excellence in Automotive Engineering

Aimed at offering engineering students with hands-on experience about powertrains & its functioning, the students will gain the opportunity to practically assemble and disassemble engines and gain a better understanding about automobile powertrains.

- **Expertise**

Automotive Mechatronics
Automotive Electrical, Electronics and Sensor Applications

- **Facilities**

Toyota engine, transmission, and powertrain as cut section, Electrical Simulators, Mechanical Simulators, Electronics Simulators

Centres of Excellence for Interdisciplinary Research

Go, change the world

I-STEM Institutional ID : IN00282

I-STEM
Linking Researchers and Resources

Indian Science Technology and Engineering facilities Map (I-STEM)

Part of One Nation One Portal for Linking Researchers and Resources through I-STEM

Part of conducting skill development programs with our facilities through I-STEM to Create a pool of Skilled Personnel For O&M

Supports listing, sharing, live bookings, online invoice payment and receipt for usage of our R&D labs through I-STEM

Regular Participants of I-STEM Tech Management conclave (ITMC)

RAMAN

LASER Writer

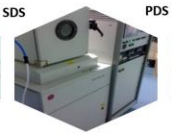
ITMC – Feb 2023

R&D Facilities & Equipments (CoEs / Depts) : 70

PECVD

CADS

SDS



PDS

Intellectual Properties

Go, change the world

IPR Coordination Cell
Innovation & Patenting Activities

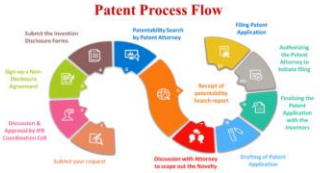
Published **53**

Filed **62**

46 FER-Response

22 Granted

Patent Process Flow



TEAM

Dr. K.N. Subramanya, *Principal, RVCE*
Dr. M. Uttara Kumari, *Professor, Dept. of EC & Coordinator, IPR Cell, RVCE*
Dr. H.N. Narasimha Murthy, *Professor, Dept. of ME, RVCE*
Dr. C.K. Nagendra Gupta, *Professor & Head, Dept. of IM, RVCE*
Dr. B.G. Sudarshan, *Medical Officer and Associate Professor, Dept. of EI, RVCE*
Dr. B.T. Chitra, *Asst. Professor, Dept. of IM, RVCE*
Mr. R.B.Ravivarma, *System Administrator, RVCE*

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Patents Granted

Go, change the world

S. No.	Patent No.	Inventors	Invention Title	Date of Filing	Date of Grant
1	420973	Kendaganna Swamy S Dewank Saxena Ansul Jain Shraddha Raj Vishwas Ramachandra Katti	Gesture Recognition System and Device With Sign Language Translation	30/03/2016	08/02/2023
2	423922	Azra Nasreen Shobha G Poornanand Purushottam Naik	Method, System and Apparatus for Preventing Shoulder Surfing in Secure Electronic Transactions	07/01/2019	03/03/2023
3	436273	Dr. Shanmukha Nagaraj Dr. Sridhar R Sandeep Krishna H Abhishek G Y Kudamala Rama Mohan Reddy Rahul R Badenkal	Tractor Mounted Aerial Work Platform for Arecanut Farming	15/09/2017	29/06/2023
4	436725	Dr Sharvani G S Prashant Abbi Srijan Devnath N M Nishantl	Agrosonic: An Autonomous Machine to Spread Fertilizers and Pesticides	06/05/2020	30/06/2023

Indo Universal Collaboration for Engineering Education (IUCEE)

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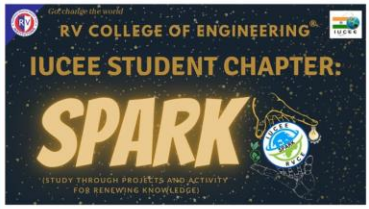

Vision
Believe in studying through projects and activities for renewing knowledge.

Mission
- Aim to enrich and enhance our community through technical and cultural diversity, curiosity, and the overall development of engineering students.
- Improving the educational experience beyond classroom walls and enhancing our ethical values
- Innovations by out-of-the-box thinking

The IUCEExRVCE students chapter aims to provide an out of the box experience, compared to a conventional classroom experience.
Specially handpicked about 100-120 students and formed a separate class named SPARK where they not only learn their regular curriculum but also have a few different experiences like mini courses and working towards the SDGs (Sustainable development goals) and working towards making the society a better and sustainable place.
To cultivate leadership qualities and social responsibility among engineers to work towards a broader spectrum of the society by helping in enriching the prosperity of the environment and the world.




Research Scholars' Statistics (Total – 535)

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Dept.	Male	Female	Full time	Part time	Internal Research Scholars	External Research Scholars	Awarded	Pursuing	Awarded during Jan 2022 to Jul. 2023 only
AS	1	1	1	1	1	1	1	1	0
BT	8	20	10	18	3	25	10	18	2
CV	37	21	3	55	17	41	27	31	6
CH	9	9	3	15	9	9	10	8	1
CSE	26	71	9	88	30	67	41	56	10
EEE	12	24	0	36	6	30	15	21	5
ECE	26	37	0	63	27	36	36	27	9
EIE	13	17	1	29	9	21	20	10	6
IEM	13	6	2	17	5	14	4	15	2
ISE	15	23	2	36	13	25	15	23	6
ME	53	6	6	53	14	45	16	43	2
ET	8	14	0	22	9	13	9	13	1
MCA	15	16	0	31	10	21	10	21	0
PHY	1	5	0	6	0	6	0	6	0
CHM	5	7	1	11	2	10	6	6	0
MAT	4	12	2	14	5	11	7	9	5
Total	246	289	40	495	160	375	227	308	55

Number of research scholars awarded with PhD degree during Jan 2022 to Jul. 2023 ~~55~~

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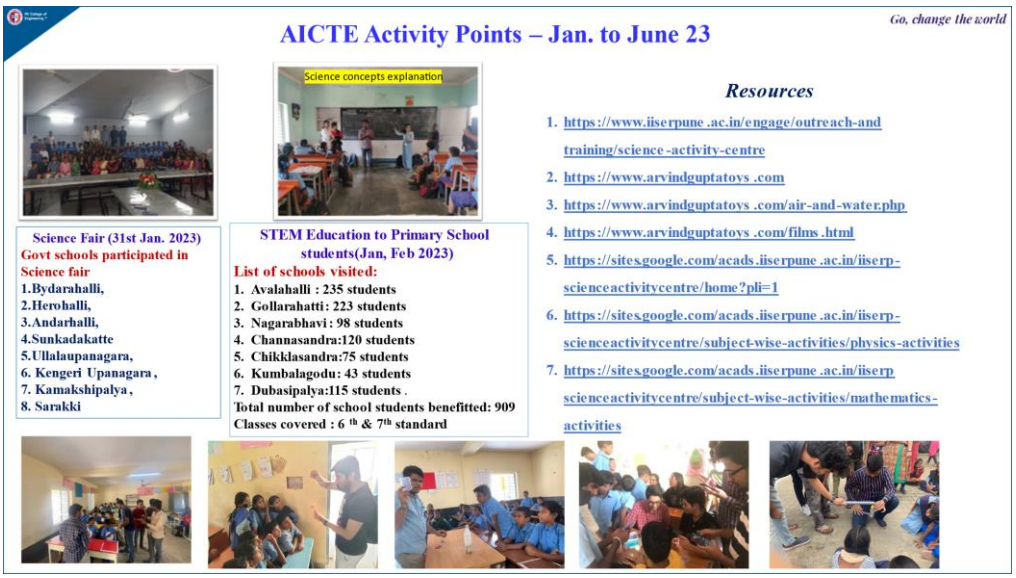

The external members congratulated the faculty, students, management for their achievements.

***Sub. No. 293*:** **To approve the scheme and syllabus of III-year B.E programs of 2021 scheme.**

&

***Sub. No. 294*:** **To approve the Scheme & Syllabus of II B.E. Programs of 2022 scheme.**

The Chairman briefed about the revised structure of the scheme, which is prepared based on the VTU guidelines of the autonomous system. Various Board of Studies chairpersons appraised the council regarding scheme and syllabus of III year B.E. programs of 2021 scheme and II year B.E programs of 2022 scheme **(Annex. A)**

Following discussions / suggestions were made during the deliberations.

1) Prof. Shivakumar suggested removing the year from the Course Code in the new 2022 scheme.
2) All department faculty to teach Mathematics course atleast one unit in IV semester of 2022 scheme.
3) Prof. Shivakumar suggested adding one more credit in IV Sem. 2022 scheme "Discrete Mathematical Structure" course of CS/IS program.
4) CFD course can be offered as a core course instead of an elective in Mechanical stream.

5) Chairman suggested preparing a course structure chart for all the programs with pre-requisites to give proper mapping to courses.
6) Suggested to introduce Drone course as an elective.
7) To change the course title of Deep Learning in VI Sem. ECE elective, so that the course is dealt along with applications. Dr. Sadashivappa suggested changing the title to "Signal Processing with Deep Learning".
8) Mechatronics course to be removed from Group C and move to 5th Sem. Elective of 2021 scheme.
9) To change Metrology and Measurement course title in V Sem. 2021 scheme as Digital Metrology & Measurements.
10) The chairman suggested making the common courses wherever feasible.
11) Prof. Martin Jebaraj gave overall comments on the courses and suggested solving more social and defence related problems & helping the country to grow better.

Resolution: *After a detailed discussion, the Council approved the scheme & syllabus of III year B.E programs of 2021 scheme & II B.E. Programs of 2022 scheme and suggested incorporating the changes before distributing it to the students. The Council also endorsed its approval to offer NPTEL courses as and when it changes.*

Sub. No. 295: **To approve the Scheme & Syllabus of I & II year MCA Program of 2022 Scheme.**

The BoS Chairperson of MCA briefed about the scheme structure of the I & II-year MCA program of 2022 scheme. **(Annex. B)**

Resolution: *The Council approved the scheme and syllabus of I & II-year MCA program of 2022 scheme.*

Sub. No. 296: To approve new Grading System for M.Tech & MCA Programs, new academic guidelines for 2022 scheme, as per the VTU regulations dated 23 Mar. 2023.

The Chairman briefed about the new grading system for M.Tech and MCA programs, new academic guidelines for 2022 scheme as per the VTU regulations dtd. 23 Mar. 2022, through a presentation.

- Duration of the program is 2 years (4 semesters)
- Maximum duration of the program M.Tech & MCA: 4 years

Level	Out standing	Excellent	Very Good	Good	Average	Pass	Fail
Score (Marks) Range %	90-100	80-89	70-79	60-69	55-59	50-54	0-49
Grade	O	A+	A	B+	B	C	F
Grade Points	10	9	8	7	6	5	0
	CGPA to Percentage= CGPAx10 %						

Resolution: *The Council approved the new grading system for M.Tech & MCA programs, new academic guidelines for 2022 scheme as per VTU regulations dt. 23.Mar. 2023.*

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Proceedings of 36th Academic Council Meeting held on 20th Jul. 2023

Sub. No. 297: Results Analysis of BE Programs

The Chairman briefed the council about result analysis of BE programs of 8th Sem. students (excluding Fastrack 2023).

Consolidated List of Graduating students (UG) 2019-2023												
S. No	Programme	No of students Admitted	Number of graduating students (Completed in four years) #		First Class with Distinction		First Class		Second Class		Pass Class	
		Nos	Nos	%	Nos	%	Nos	%	Nos	%	Nos	%
1	Computer Science & Engineering	218	187	85.7	143	76.4	42	22.45	02	1.06	-	-
2	Aerospace Engineering	72	60	83.3	44	73.3	16	26.60	-	-	-	-
3	Biotechnology	55	39	70.9	29	74.35	10	25.60	-	-	-	-
4	Civil Engineering	143	102	71.3	42	41.17	44	43.13	16	15.68	-	-
5	Chemical Engineering	38	25	65.7	16	64	7	28.0	2	0.80	-	-
6	Electronics & Communication Engineering	211	179	84.8	127	70.94	42	23.46	09	0.50	-	-
7	Electrical & Electronics Engineering	73	55	75.3	24	43.63	28	50.90	03	0.54	-	-
8	Electronics & Instrumentation Engineering	66	45	68.1	35	77.7	10	22.20	-	-	-	-
9	Electronics & Telecommunication Engineering	69	57	82.6	29	50.87	26	45.61	2	0.30	-	-
10	Industrial Engineering & Management	72	53	73.6	22	41.50	23	43.39	4	0.70	2	0.37
	Mechanical Engineering	148	115	77.7	69	66.60	43	37.39	02	0.17	-	-
12	Information Science & Engineering.	72	64	88.8	50	78.12	11	17.18	3	0.46	-	-
Total		**1237**	**991**	**80.01%**								

No. of students appeared and passed in all subjects during the examination.

S. No.	Branch Name	Scheme	UG – 1 Sem.		Pass %
			No. of Students Appeared	No. of Students Passed	
1	Aerospace Engineering	2022	65	51	78.46
2	Biotechnology	2022	64	56	87.50
3	Chemical Engineering	2022	42	29	69.05
4	Computer Science and Engineering	2022	240	226	94.17
5	Computer Science & Engineering (Cyber Security)	2022	63	56	88.89
6	Computer Science & Engineering (Data Science)	2022	63	59	93.65
7	Civil Engineering	2022	122	66	54.10
8	Electronics & Communication Engineering	2022	191	164	85.86
9	Electrical & Electronics Engineering	2022	65	41	63.08
10	Electronics & Instrumentation Engineering	2022	63	48	76.19
11	Industrial Engineering and Management	2022	64	37	57.81

12	Information Science and Engineering	2022	81	75	92.59
13	Mechanical Engineering	2022	128	76	59.38
14	Electronics And Telecommunication Engg.	2022	63	50	79.37

S. No.	Branch Name	Scheme	UG - 3rd Sem.		Pass %
			No. of Students Appeared	No. of Students Passed	
1	Artificial Intelligence & Machine Learning	2021	68	62	91.18
2	Aerospace Engineering	2021	68	41	60.29
3	Biotechnology	2021	65	50	76.92
4	Chemical Engineering	2021	41	33	80.49
5	Computer Science & Engg.	2021	210	182	86.67
6	Civil Engineering	2021	136	88	64.71
7	Electronics & Communication Engg.	2021	212	168	79.25
8	Electrical & Electronics Engg.	2021	72	52	72.22
9	Electronics & Instrumentation Engg.	2021	68	44	64.71
10	Industrial Engineering & Mgmt.	2021	67	51	76.12
11	Information Science and Engineering	2021	69	64	92.75
12	Mechanical Engineering	2021	135	98	72.59
13	Electronics & Telecommunication Engg.	2021	70	48	68.57

S. No.	Branch Name	Scheme	UG – 5th Sem.		Pass %
			No. of Students Appeared	No. of Students Passed	
1	Aerospace Engineering	2018	69	54	78.26
2	Biotechnology	2018	57	50	87.72
3	Chemical Engineering	2018	43	27	62.79
4	Computer Science and Engineering	2018	212	184	86.79
5	Civil Engineering	2018	129	91	70.54
6	Electronics & Communication Engg.	2018	204	163	79.90
7	Electronics & Instrumentation Engineering	2018	64	57	89.06
8	Industrial Engineering and Management	2018	66	55	83.33
9	Information Science and Engineering	2018	67	61	91.04
10	Mechanical Engineering	2018	135	119	88.15
11	Electronics & Telecommunication Engg.	2018	72	54	75.00
12	Electrical And Electronics Engineering	2018	67	55	82.09

Sub. No. 298: Result analysis of M.Tech and MCA programs.

The chairman briefed about the result analysis of M.Tech and MCA programs.

No. of students appeared and passed in all subjects during the exam

S. No.	Branch Name	Scheme	PG – 5th sem.		Pass %
			No. of Students Appeared	No. of Students Passed	
1	Master of Computer Applications	2020	116	111	95.69

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No. of students appeared and passed in all subjects during the exam (M.Tech)

S. No.	Branch Name	Scheme	PG – 3rd Sem.		Pass %
			No. of Students Appeared	No. of Students Passed	
1	Product Design and Manufacturing	2018	28	28	100
2	Digital Communication	2018	16	16	100
3	Computer Science and Engineering	2018	16	16	100
4	Computer Integrated Manufacturing	2018	10	9	90.00
5	VLSI Design and Embedded Systems	2018	35	34	97.14
6	Computer Network Engineering	2018	15	15	100
7	Machine Design	2018	18	18	100
8	Power Electronics	2018	15	14	93.33
9	Communication Systems	2018	4	4	100
10	Structural Engineering	2018	16	15	93.75
11	Software Engineering	2018	13	13	100
12	Information Technology	2018	14	14	100
13	Highway Technology	2018	12	12	100
14	Biotechnology	2018	16	16	100.00
15	Radio Frequency and Microwave Engineering	2018	2	2	100.00

Sub. No. 299: Approval of Ranks & Graduating List for the 13th Graduation Ceremony and conduction of graduation day.

The Chairman informed the council that, 13th Graduation Day is scheduled on 19th Aug. 2023 at Poornima Palace, Near RVCE campus. Invitation letter sent to Dr. B. Venkatraman, Director, Indira Gandhi Centre for Atomic Research, Kalpakkam, TN, as Chief Guest & deliver convocation address. He has accepted our invitation to be the Chief Guest. Invitation letter sent to Mr. Kabeer Biswas, CEO & Founder, DUNZO. He has accepted the invitation and deliver the inaugural address during the programme. Various committees will be formed for conduction of the Graduation Ceremony. 8th Sem. results are announced. We will also be completing the supplementary semester by 1st week of Aug. 2023.

The Controller of Examinations briefed about the list of rank holders and graduates of 2023 passing out batch of BE students. **(Annex. C)**

The Chairman further informed the Council that the list of Graduates will be appended after the fast-track results. He also briefed the following:

- **Number of students taking Fast Track Session-1A: 55**
  - for all the outgoing students of 19 admission having **ONLY TWO** backlogs of VII sem B.E. Courses
  - Duration: 1 Month
- **Number of students taking Fast Track Session-1B: 93**
  - for all the outgoing students of 19 admission having ONLY TWO backlogs from I to VI semesters B.E. Courses.
  - Duration 1 Month
- There will be a regular fast track in the month of October:
  - Duration: 2 Months
  - All courses are **REPEATED ONCE AGAIN FROM 1 TO VIII SEMESTERS**

- By providing this opportunity, additional 148 students will be added to our graduation ceremony

Resolution: *The council unanimously endorsed its approval for the Gold Medallists, Rank Holders and Graduate List of passing our batch of 2023 students of BE programs. Also, the Council endorsed its approval to append the graduate list after the fast-track results.*

Sub. No. 300: Any other subject/s.

1) Approval for change in CO attainment from 80:20 to 60:40.

The Chairman briefed that in the previous 2018 scheme the CO attainment was 80% CIE and 20% SEE. It is proposed to change the CO attainment of 2021 & 2022 scheme from 60% CIE and 40% SEE.

Resolution: *The Council approved to change CO attainment from 80:20 to 60:40.*

2) Approval for conduction of two fast track examination in this current semester

The member secretary briefed that as per regulations from the affiliated university, VTU, it was proposed to conduct one fast track semester for the outgoing students of 8th semester. However, since the academic calendar of remaining semesters are different, one more fast track semester would be conducted to facilitate the remaining students.

Resolution: *The council approved to conduct two fast track examinations for the same courses in one academic calendar for students of 2018 scheme.*

3) Approval for conduction of SEE examination of some Lab only courses in Exhibition mode.

The member secretary explained that some of the Lab only courses in the 2018, 2021 and 2022 scheme consisted more of teamwork and hands-on experience of the students, and hence proposed to have the Semester End Examination for these courses in the mode of Exhibition. However, the students would be evaluated and assessed individually.

Resolution: *The council approved to conduct the SEE of the lab only courses of the above-mentioned schemes in the mode of exhibition.*

4) Approval for conduction of Open Book CIE.

The Member Secretary briefed that Commencing from next academic semester, we would like to explore the possibility of conducting an open book CIE. Any one of The CIEs would be an open book. Subsequently, we would bring this to SEE also. Not applicable to First Year B.E. Programs.

Resolution: *The Council endorsed its approval for conduction of Open Book CIE from next academic semester.*

5) New Members of Academic Council

The chairman informed the Council that the following four academicians / industry experts outside the college, have been nominated to the Academic Council of RVCE for a period of 3 years w.e.f. 1.9.2023 till 31.8.2026, by the Governing Body.

a) Dr. Sanjay R. Chitnis, Dean, School of Computer Science and Engineering, RV University, Bengaluru.
b) Dr. M. Mathirajan, Chief Research Scientist, Dept. of Management Studies, IISc, Bengaluru.
c) Dr. M.H. Kori, Retd. Technical Director, Alcatel Lucent Technologies, Bengaluru.
d) Sri. T.R. Parasuraman, Ex President, Toyota Industries Engine India Private Limited, Bengaluru.

All the above experts to be part of the Academic Council for the period as mentioned above.

The meeting concluded with thanks to the chair.

Member Secretary

Member Secretary
Academic Council
R V College of Engineering (Autonomous)
Bangalore-560 059

ANNEXURE - A

UPDATED AS ON 13-10-2023

FIRST SEMESTER CHEMISTRY CYCLE					
CS STREAMS: (AI, BT, CS, CD, CY & IS)					
SL. NO.	**BoS**	**FIRST SEM COURSE CODES**	**Course Title**	**SECOND SEM COURSE CODES**	**Credits**
1	MA	MAT211CT	Fundamentals of Linear Algebra, Calculus And Statistics		4
2	CHY	CHY211AI	Chemistry Of Smart Materials And Devices		4
3	ME	ME112GL	Computer Aided Engineering Graphics	ME122GL	3
4	XX	XX113XT	Engineering Science Courses-I	XX123XT	3
5	XX	XX115XI	Programming Language Courses	XX125XI	3
6	HSS	HSS111EL	Communicative English-I	HSS121EL	1
7	HSS	HSS114CT	Fundamentals of Indian Constitution	HSS124CT	1
8	HSS	HSS115YL	Scientific Foundations of Health-Yoga Practice	HSS125YL	1
					20

4. ENGINEERING SCIENCE-I					
Sl.No	**BoS**	**FIRST SEM COURSE CODES**	**COURSE TITLE**	**SECOND SEM COURSE CODES**	**Credits**
1	CS	CS113AT	Fundamentals of Programming using C	CS123AT	3
1	CV	CV113AT	Elements of Civil Engineering	CV123AT	3
2	EC	EC113AT	Principles of Electronics Engineering	EC123AT	3
3	EE	EE113AT	Basics of Electrical Engineering	EE123AT	3
4	ME	ME113AT	Fundamentals of Mechanical Engineering	ME123AT	

5. PROGRAMMING LANGUAGE-I					Credits
Sl.No	**BoS**	**FIRST SEM COURSE CODES**	**COURSE TITLE**	**SECOND SEM COURSE CODES**	3
1	AI	AI115AI	Introduction to Python programming	AI125AI	3
2	CS	CS115AI	Introduction to Web programming	CS125AI	3
3	CS	CS115BI	Basics of Java programming	CS125BI	3
4	IS	IS115AI	Introduction to C++ Programming	IS125AI	

SECOND SEMESTER CHEMISTRY CYCLE

ME, EC & CV STREAMS: (AS, CH, IM & ME), (EC, EE, EI & ET) & CV

SL. NO.	BoS	FIRST SEM COURSE CODES	Course Title	SECOND SEM COURSE CODES	Credits
1	MA		Vector Calculus, Laplace Transform And Numerical Methods	MAT221AT	4
	MA		Vector Calculus And Computational Methods	MAT221BT	4
	MA		Applied Mathematics – II	MAT221DT	4
2	CHY		Chemistry of functional materials	CHY221BI	4
	CHY		Chemistry of Engineering materials	CHY221CI	4
	CHY		Engineering And Environmental Chemistry	CHY221DI	4
3	ME	ME112GL	Computer Aided Engineering Graphics	ME122GL	3
4	XX	XX113XT	Engineering Science Courses-II	XX123XT	3
5	XX	XX115XI	Programming Language Courses	XX125XI	3
6	HSS	HSS111EL	Communicative English-II	HSS121EL	1
7	HSS	HSS114CT	Fundamentals of Indian Constitution	HSS124CT	1
8	HSS	HSS115YL	Scientific Foundations of Health-Yoga Practice	HSS125YL	1
					20

4. ENGINEERING SCIENCE-II					Credits
Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	3
1	CS	CS113AT	Fundamentals of Programming using C	CS123AT	3
2	CV	CV113AT	Elements of Civil Engineering	CV123AT	3
3	EC	EC113AT	Principles of Electronics Engineering	EC123AT	3
4	EE	EE113AT	Basics of Electrical Engineering	EE123AT	3
5	ME	ME113AT	Fundamentals of Mechanical Engineering	ME123AT	

5. PROGRAMMING LANGUAGE-II					Credits
Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	3
1	AI	AI115AI	Introduction to Python programming	AI125AI	3
2	CS	CS115AI	Introduction to Web programming	CS125AI	3
3	CS	CS115BI	Basics of Java programming	CS125BI	3
4	IS	IS115AI	Introduction to C++ Programming	IS125AI	

UPDATED AS ON 13-10-2023

FIRST SEMESTER PHYSICS CYCLE

ME, EC & CV STREAMS: (AS, CH, IM & ME), (EC, EE, EI & ET) & C V

SL. NO.	BoS	FIRST SEM COURSE CODES	Course Title	SECOND SEM COURSE CODES	Credits
1	MA	MAT211AT	Fundamentals of Linear Algebra, Calculus And Numerical Methods		4
	MA	MAT211BT	Fundamentals of Linear Algebra, Calculus And Differential Equations		4
	MA	MAT211DT	Applied Mathematics – I		4
2	PHY	PHY211AI	Condensed Matter Physics for Engineers		4
	PHY	PHY211BI	Classical Physics for Engineers		4
	PHY	PHY211DI	Applied Physics for Engineers		4
3	XX	XX112AT	Professional Core Courses	XX122AT	3
4	XX	XX113AT	Engineering Science Courses-I	XX123AT	3
5	XX	XX114XT	Emerging Technology Courses-I	XX124XT	3
6	HSS	HSS111EL	Communicative English-I	HSS121EL	1
7	HSS	HSS112SK HSS113BK	Samskruthika Kannada Balake Kannada	HSS122SK HSS123BK	1
8	ME	ME111DL	IDEA LAB (Idea Development, Evaluation & Application)	ME121DL	1
					20

3. PROFESSIONAL CORE COURSES

Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	Credits
1	EC	EC112AT	Basic Electronics	EC122AT	3
2	EE	EE112AT	Elements of Electrical Engineering	EE122AT	3
3	ME	ME112AT	Elements of Mechanical Engineering	ME122AT	3
4	CV	CV112AT	Engineering Mechanics	CV122AT	3

4. ENGINEERING SCIENCE-I

Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	Credits
1	CS	CS113AT	Fundamentals of Programming using C	CS123AT	3
2	CV	CV113AT	Elements of Civil Engineering	CV123AT	3
3	EC	EC113AT	Principles of Electronics Engineering	EC123AT	3
4	EE	EE113AT	Basics of Electrical Engineering	EE123AT	3
5	ME	ME113AT	Fundamentals of Mechanical Engineering	ME123AT	3

5. EMERGING TECHNOLOGY

Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	Credits
1	AI	AI114AT	Introduction to Internet of Things	AI124AT	3
2	AS	AS114AT	Introduction to Drone Technology	AS124AT	3
3	BT	BT114AT	Bioinspired Engineering	BT124AT	3
4	CH	CH114AT	Global Climate Change	CH124AT	3
5	CS	CS114AT	Elements of Blockchain Technology	CS124AT	3
6	CS	CS114BT	Introduction to Cyber Security	CS124BT	3
7	CV	CV114AT	Green Buildings	CV124AT	3
8	CV	CV114BT	Infrastructure for Smart Cities	CV124BT	3
9	CHY	CHY114AT	Fundamental of Nanoscience & Technology	CHY124AT	3
10	EC	EC114AT	Fundamentals of Semiconductor Devices	EC124AT	3
11	EC	EC114BT	Introduction to Embedded Systems	EC124BT	3
12	EE	EE114AT	Renewable Energy Sources	EE124AT	3
13	EI	EI114AT	Fundamentals of Sensor Technology	EI124AT	3
14	IM	IM114AT	Human factors in Engineering	IM124AT	3
15	IS	IS114AT	Digital Humanities	IS124AT	3
16	ME	ME114AT	Smart materials and Systems	ME124AT	3
17	ME	ME114BT	Elements of Industry 4.0	M5124BT	3

SECOND SEMESTER PHYSICS CYCLE

CS STREAMS: (AI, BT, CS, CD, CY & IS)

SL. NO.	BoS	FIRST SEM COURSE CODES	Course Title	SECOND SEM COURSE CODES	Credits
1	MA		Number Theory, Vector Calculus And Computational Methods	MAT221CT	4
2	PHY		Quantum Physics for Engineers	PHY221CI	4
3	XX	XX112AT	Professional Core Courses	XX122AT	3
4	XX	XX113AT	Engineering Science Courses-II	XX123AT	3
5	XX	XX114XT	Emerging Technology Courses-II	XX124XT	3
6	HSS	HSS111EL	Communicative English-II	HSS121EL	1
7	HSS	HSS112SK HSS113BK	Samskruthika Kannada Balake Kannada	HSS122SK HSS123BK	1
8	ME	ME111DL	IDEA LAB (Idea Development, Evaluation & Application)	ME121DL	1
					20

3. PROFESSIONAL CORE COURSES

Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	Credits
1	CS		Principles of Programming using C	CS222AI	3

4. ENGINEERING SCIENCE-II

Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	Credits
1	CS	CS113AT	Fundamentals of Programming using C	CS123AT	3
1	CV	CV113AT	Elements of Civil Engineering	CV123AT	3
2	EC	EC113AT	Principles of Electronics Engineering	EC123AT	3
3	EE	EE113AT	Basics of Electrical Engineering	EE123AT	3
4	ME	ME113AT	Fundamentals of Mechanical Engineering	ME123AT	3

5. EMERGING TECHNOLOGY-II

Sl.No	BoS	FIRST SEM COURSE CODES	COURSE TITLE	SECOND SEM COURSE CODES	Credits
1	AI	AI114AT	Introduction to Internet of Things	AI124AT	3
2	AS	AS114AT	Introduction to Drone Technology	AS124AT	3
3	BT	BT114AT	Bioinspired Engineering	BT124AT	3
4	CH	CH114AT	Global Climate Change	CH124AT	3
5	CS	CS114AT	Elements of Blockchain Technology	CS124AT	3
6	CS	CS114BT	Introduction to Cyber Security	CS124BT	3
7	CV	CV114AT	Green Buildings	CV124AT	3
8	CV	CV114BT	Infrastructure for Smart Cities	CV124BT	3
9	CHY	CHY114AT	Fundamental of Nanoscience & Technology	CHY124AT	3
10	EC	EC114AT	Fundamentals of Semiconductor Devices	EC124AT	3
11	EC	EC114BT	Introduction to Embedded Systems	EC124BT	3
12	EE	EE114AT	Renewable Energy Sources	EE124AT	3
13	EI	EI114AT	Fundamentals of Sensor Technology	EI124AT	3
14	IM	IM114AT	Human factors in Engineering	IM124AT	3
15	IS	IS114AT	Digital Humanities	IS124AT	3
16	ME	ME114AT	Smart materials and Systems	ME124AT	3
17	ME	ME114BT	Elements of Industry 4.0	M5124BT	3

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MAT231ET	Mathematics for Artificial Intelligence & Machine Learning	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	AI	AI233AI	Fundamentals of Data Structures and Data Analysis	Theory & Lab
4	AI	AI234AI	Foundations of Cyber Physical Systems	Theory & Lab
5	AI	AI235AT	Statistics for Data Science	Theory
6	AI	AI237DL	Design Thinking Lab	LAB
7	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	CS	CS241AT	Discrete Mathematical Structures and Combinatorics	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	CS	CS343AI	Design and Analysis of Algorithms	Theory & Lab
5	AI	AI244AI	Artificial Intelligence and Machine Learning	Theory & Lab
6	CS	CS345AT	Computer Networks	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231BT	Statistics, Laplace Transform and Numbercal Methods	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	AS	AS233AI	Thermodynamics	Theory & Lab
4	AS	AS234AI	Mechanics of Fluids	Theory & Lab
5	AS	AS235AT	Structural Mechanics	Theory
6	HS	HS237XL	Ability Enhancement Course	LAB
7	AS	AS338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA241AT	Probability Theory and Linear Programming	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	AS	AS343AI	Aerospace Propulsion	Theory & Lab
5	AS	AS244AI	Aerospace Structures	Theory & Lab
6	AS	AS345AT	Fundamentals of Avionics	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	AS	AS237DL	Design Thinking Lab	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231BT	Statistics, Laplace Transform and Numbercal Methods	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	BT	BT233AI	Cell and Molecural Biology	Theory & Lab
4	BT	BT234AI	Unit Operations	Theory & Lab
5	BT	BT235AT	Thermodynamics and Bioanalytical Techniues	Theory
6	HS	HS237XL	Ability Enhancement Course	LAB
7	BT	BT338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	BT	BT241AT	Biostatistics	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	BT	BT343AI	Programming for Computational Biology	Theory & Lab
5	BT	BT244AT	Biochemistry	Theory & Lab
6	BT	BT345AT	Bioprocesses Calculations	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	BT	BT237DL	Design Thinking Lab	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231CT	Linear Algebra and Probability Theory	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	IS	IS233AI	Data Structure and Applications	Theory & Lab
4	CS	CS234AI	Applied Digital Logic Design and Computer Organisation	Theory & Lab
5	CS	CS235AT	Operating Systems	Theory
6	CS	CS237DL	Design Thinking Lab	LAB
7	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	CS	CS241AT	Discrete Mathematical Structures and Combinatorics	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	CS	CS343AI	Design and Analysis of Algorithms	Theory & Lab
5	CS	CS244AI	IoT and Embedded Computing	Theory & Lab
6	CS	CS345AT	Computer Networks	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231BT	Statistics, Laplace Transform and Numbercal Methods	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	CH	CH233AI	Momentum Transfer	Theory & Lab
4	CH	CH234AI	Particulate Technology	Theory & Lab
5	CH	CH235AI	Chemical Process Calculation	Theory
6	HS	HS237XL	Ability Enhancement Course	LAB
7	CH	CH338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA241AT	Probability Theory and Linear Programming	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	CH	CH343AI	Process Heat Transfer	Theory & Lab
5	CH	CH244AT	Chemical Reaction Engineering	Theory & Lab
6	CH	CH345AT	Chemical Engineering Thermodynamics	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	CH	CH237DL	Design Thinking Lab	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231CT	Linear Algebra and Probability Theory	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	IS	IS233AI	Data Structure and Applications	Theory & Lab
4	CS	CS234AI	Applied Digital Logic Design and Computer Organisation	Theory & Lab
5	CS	CS235AT	Operating Systems	Theory
6	CS	CS237DL	Design Thinking Lab	LAB
7	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	CS	CS241AT	Discrete Mathematical Structures and Combinatorics	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	CS	CS343AI	Design and Analysis of Algorithms	Theory & Lab
5	CS	CS244AI	IoT and Embedded Computing	Theory & Lab
6	CS	CS345AT	Computer Networks	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231DT	Applied Mathematics for Civil Engineering	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	CV	CV233AI	Surveying	Theory & Lab
4	CV	CV234AI	Concrete Technology	Theory & Lab
5	CV	CV235AI	Mechanics of Materials	Theory
6	HS	HS237XL	Ability Enhancement Course	LAB
7	CV	CV338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA241AT	Probability Theory and Linear Programming	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	CV	CV343AI	Fluid Mechanics	Theory & Lab
5	CV	CV244AT	Building Planning and Drawing	Theory & Lab
6	CV	CV345AT	Structural Analysis	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	CV	CV237DL	Design Thinking Lab	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231CT	Linear Algebra and Probability Theory	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	IS	IS233AI	Data Structure and Applications	Theory & Lab
4	CS	CS234AI	Applied Digital Logic Design and Computer Organisation	Theory & Lab
5	CS	CS235AT	Operating Systems	Theory
6	CY	CY237DL	Design Thinking Lab	LAB
7	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	CS	CS241AT	Discrete Mathematical Structures and Combinatorics	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	CS	CS343AI	Design and Analysis of Algorithms	Theory & Lab
5	CS	CS244AI	IoT and Embedded Computing	Theory & Lab
6	CS	CS345AT	Computer Networks	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231AT	Linear Algebra, Fourier Transform ans Statistics	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	EC	EC233AI	Anolog Microelectronic Circuit	Theory & Lab
4	EC	EC234AI	Analysis and Design of Digital Circuits with HDL	Theory & Lab
5	EC	EC235AT	Network Analysis and Control Engineering	Theory
6	AI	AI237DL	Design Thinking Lab	LAB
7	EC	EC338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	EC	EC241AT	Mathematics for Communication Engineering	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	EI	EI343AI	Microcontroller & Progrmming	Theory & Lab
5	EC	EC244AI	Signals and Systems	Theory & Lab
6	EC	EC345AT	Electro Magnetic Fields & Applications	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231AT	Linear Algebra, Fourier Transform ans Statistics	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	EE	EE233AT	Electronics& Linear Integrated Circuits	Theory & Lab
4	EC	EC234AT	Analysis and Design of Digital Circuits with HDL	Theory & Lab
5	EE	EE235AT	Signals and Network Analysis	Theory
6	AI	AI237DL	Design Thinking Lab	LAB
7	EE	EE338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA241AT	Probability Theory and Linear Programming	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	EI	EI343AI	Microcontroller & Progrmming	Theory & Lab
5	EE	EE244AT	Power Electronics and Applications	Theory
6	ET	ET345AT	Principles of Electromagnetics	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231AT	Linear Algebra, Fourier Transform ans Statistics	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	EI	EI233AT	Linear Integrated Circuits and Applications	Theory & Lab
4	EC	EC234AT	Analysis and Design of Digital Circuits with HDL	Theory & Lab
5	EI	EI235AT	Control Engineering	Theory
6	AI	AI237DL	Design Thinking Lab	LAB
7	EI	EI338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA241AT	Probability Theory and Linear Programming	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	EI	EI343AI	Microcontroller & Progrmming	Theory & Lab
5	EC	EC244AI	Signals and Systems	Theory & Lab
6	EI	EI345AT	Sensors and Actuators	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231AT	Linear Algebra, Fourier Transform ans Statistics	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	EI	EI233AT	Linear Integrated Circuits and Applications	Theory & Lab
4	EC	EC234AT	Analysis and Design of Digital Circuits with HDL	Theory & Lab
5	ET	ET235AT	Signal Processing - I	Theory
6	ET	ET237DL	Design Thinking Lab	LAB
7	ET	ET338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA241AT	Probability Theory and Linear Programming	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	EI	EI343AI	Microcontroller & Progrmming	Theory & Lab
5	ET	ET244AI	Communication Engineering - I	Theory
6	ET	ET345AT	Principles of Electromagnetics	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231BT	Statistics, Laplace Transform and Numbercal Methods	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	IM	IM233AI	Work Systems Design	Theory & Lab
4	IM	IM234AI	Manufacturing Processes	Theory & Lab
5	IM	IM235AI	Metrology & Measurements	Theory
6	HS	HS237XL	Ability Enhancement Course	LAB
7	IM	IM338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	IM	IM241AT	Statistics for Data Analytics	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	IM	IM343AI	CAD/CAM & Robotics	Theory & Lab
5	IM	IM244AT	Operations Research	Theory & Lab
6	IM	IM345AT	Marketing Management	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	IM	IM237DL	Design Thinking Lab	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231CT	Linear Algebra and Probability Theory	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	IS	IS233AI	Data Structure and Applications	Theory & Lab
4	IS	IS234AI	Logic Design and Computer Organisation	Theory & Lab
5	CS	CS235AT	Operating Systems	Theory
6	IS	IS237DL	Design Thinking Lab	LAB
7	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	CS	CS241AT	Discrete Mathematical Structures and Combinatorics	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	CS	CS343AI	Design and Analysis of Algorithms	Theory & Lab
5	IS	IS244AI	Virtual and Augmented Reality	Theory & Lab
6	CS	CS345AT	Computer Networks	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	HS	HS247XL	Ability Enhancement Course	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

2022 SCHEME COURSES AND NEW COURSE CODE

THIRD SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA231BT	Statistics, Laplace Transform and Numbercal Methods	Thoery
2	CV	CV232AT	Environment & Sustainability	Thoery
	ME	ME232AT	Material Science for Engineers	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	Theory
3	ME	ME233AI	Solid Mechanics	Theory & Lab
4	ME	ME234AI	Engineering Thermodynamics	Theory & Lab
5	ME	ME235AI	Metrology and Machine Drawing	Theory & Lab
6	HS	HS237XL	Ability Enhancement Course	LAB
7	ME	ME338P	Summer Internship	Internship
8	CS	CS139DT	Bridge Course: C Programming	Theory(Audit Course)

FOURTH SEMESTER

Slo. No.	BoS	Course Code	Course Title	Category
1	MA	MA241AT	Probability Theory and Linear Programming	Theory
2	CV	CV242AT	Environment & Sustainability	Thoery
	ME	ME242AT	Material Science for Engineers	Theory
	BT	BT242AT	Bio Safety Standards and Ethics	Theory
4	ME	ME343AI	Theory of Mechines	Theory & Lab
5	ME	ME244AT	Fluid Mechanics	Theory & Lab
6	ME	ME345AT	Manufacturing Technology	Theory
7	XX	XX246XT	Professional Core Courses 3 - Group A	MOOC
8	ME	ME237DL	Design Thinking Lab	LAB
9	HS	HS248XT	Universal Human Values	Theory
10	MA	MA149DT	Bridge Course: Mathematics	Theory

ANNEXURE - B

MASTER OF COMPUTER APPLICATIONS

SCHEME & CREDIT STRUCTURE

2022 Scheme

SCHEME & CREDIT STRUCTURE

Distribution of Credits in 2022 Scheme

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2022 Scheme		
Semester	**Credits**	**Status**
I	26	**Implemented**
II	26	**Implemented**
III	29	**Proposed**
IV	19	**Proposed**
Total	**100**	

2022 Scheme : Credit structure

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I SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	22MAT11T	Mathematical Foundation for Computer Science	4	1	0	5	MAT	Theory
2	22MCA12T	Linux Shell Scripting	3	1	0	4	MCA	Theory
3	22MCA13TL	Computer Networks	4	0	1	5	MCA	Theory + Lab
4	22MCA14TL	Object Oriented Programming	4	0	1	5	MCA	Theory + Lab
5	22MCA15TL	Web Application Programming	4	0	1	5	MCA	Theory + Lab
6	22HSS16L	Ability Enhancement Course-I*	0	0	2	2	HSS	Lab
7	22MCA17T	Basics of Programming**	2	0	0	0	MCA	Theory
		Total				**26**		

2022 Scheme : Credit structure

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II SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	22MCA21T	Research Methodology and IPR	2	0	0	2	MCA	Theory
2	22MCA22T	Design and Analysis of Algorithms	3	1	0	4	MCA	Theory
3	22MCA23TL	Data Modeling	4	0	1	5	MCA	Theory + Lab
4	22MCA24TL	Cloud Native Fullstack Application Development-I	3	0	1	4	MCA	Theory + Lab
5	22MCA25XTL	Integrated Professional Elective- I	4	0	1	5	MCA	Theory + Lab
6	22MCA26XT	Professional Elective-II	3	1	0	4	MCA	Theory
7	22MCA27L	Design Thinking*	0	0	2	2	MCA	Lab
		Total				**26**		

* Societal Project - Design thinking course will be based on Sustainable Development Goals (SDGs)

II Sem: Professional Core Electives

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ELECTIVE – I		
Sl. No.	**Course Code**	**Course Title**
1	22MCA251TL	Internet of Things
2	22MCA252TL	Data Science-I
3	22MCA253TL	Software Testing and Practices
4	22MCA254TL	2D and 3D Modelling

II Sem: Professional Core Electives

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ELECTIVE – II		
Sl. No.	**Course Code**	**Course Title**
1	22MCA261T	DevOps
2	22MCA262T	Advanced Computer Networks
3	22MCA263T	Cryptography and Network Security
4	22MCA264T	Digital Marketing

2022 Scheme : Credit structure

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III SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	22MCA31T	Software Engineering	3	0	0	3	MCA	Theory
2	22MCA32TL	Modern Application Development	4	0	1	5	MCA	Theory + Lab
3	22MCA33TL	Cloud Native Fullstack Application Development-II	3	0	1	4	MCA	Theory + Lab
4	22MCA34XT	Professional Elective-III	3	1	0	4	MCA	Theory
5	22MCA35XT	Open Elective - I	3	0	0	3	MCA	Theory
6	22MCA36L	Minor Project	0	0	4	4	MCA	Lab
7	22MCA37L	Internship*	0	0	6	6	MCA	Lab
		Total				**29**		

**Six Weeks Internship to be completed during the intervening Vacation of II and III semesters*

III Sem: Professional Core Electives

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ELECTIVE – III		
Sl. No.	**Course Code**	**Course Title**
1	22MCA341T	Data Science-II
2	22MCA342T	Augmented Reality and Virtual Reality
3	22MCA343T	UI/UX
4	22MCA344T	Blockchain and Cyber Security

III Sem: Professional Core Electives

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OPEN ELECTIVE		
Sl. No.	**Course Code**	**Course Title**
1	22MCA351T	Sustainability and Society
2	22MCA352T	Anthropology and Digital World
3	22MCA353T	Media and Communication
4	22MCA354T	Philosophy and AI

2022 Scheme : Credit structure

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IV SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	22MCA41L	Project Work	0	0	15	15	MCA	Lab
2	22MCA42L	Technical Seminar	0	0	2	2	MCA	Lab
3	22HSS43L	Ability Enhancement Course-II	0	0	2	2	HSS	Lab
		Total				**19**		

2020 Scheme

SCHEME & CREDIT STRUCTURE

Distribution of Credits in 2020 Scheme

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2020 Scheme		
Semester	**Credits**	**Status**
I	26	**Implemented**
II	26	**Implemented**
III	26	**Implemented**
IV	22	**Implemented**
Total	**100**	

2020 Scheme : Credit structure

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I SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	20MAT11	Mathematical Foundation for Computer Applications	4	1	0	5	MAT	Theory
2	20MCA12	Linux Shell Scripting	3	1	0	4	MCA	Theory
3	20MCA13	Computer Networks	4	0	1	5	MCA	Theory + Lab
4	20MCA14	Object Oriented Programming	4	0	1	5	MCA	Theory + Lab
5	20MCA15	Web Application Programming	4	0	1	5	MCA	Theory + Lab
6	20HSS16	Professional Practice	0	0	2	2	HSS	Lab
7	20MCAB17	Basics of Programming * (Bridge Course)	3*	0	0	0	MCA	Theory
		Total				**26**		

2020 Scheme : Credit structure

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II SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	20MCA21	Software Engineering	3	0	0	3	MCA	Theory
2	20MAT22	Data Structures & Algorithms	3	1	0	4	MCA	Theory
3	20MCA23	Database Management System	3	0	1	4	MCA	Theory + Lab
4	20MCA24X	Elective-I	3	1	0	4	MCA	Theory
5	20MCA25X	Elective-II	3	1	0	4	MCA	Theory
6	20MCA26X	Elective-III	4	0	1	5	MCA	Theory + Lab
7	20MCA17	Design-Thinking	0	0	2	2	MCA	Lab
		Total				**26**		

II Sem: Professional Core Electives

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ELECTIVE – I (Networks)		
Sl. No.	**Course Code**	**Course Title**
1	20MCA241	Advanced Computer Networks
2	20MCA242	Network Security
3	20MCA243	Internet of Things

II Sem: Professional Core Electives

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ELECTIVE – II (Data Science)		
Sl. No.	**Course Code**	**Course Title**
1	20MCA251	Machine Learning
2	20MCA252	Big Data Analytics
3	20MCA253	Natural Language Processing

II Sem: Professional Core Electives

ELECTIVE – III

(Software Solution Development–with Practice)

Sl. No.	Course Code	Course Title
1	20MCA261	PHP based Software Solutions
2	20MCA262	Java based Software Solutions
3	20MCA263	JavaScript based Software Solutions

2020 Scheme : Credit structure

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III SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	20MCA31	Project Management	4	0	0	4	MCA	Theory
2	20MCA32	Modern Application Development	4	0	1	5	MCA	Theory + Lab
3	20MCA33X	Elective-IV	4	1	0	5	MCA	Theory
4	20MCA34X	Elective-V	4	1	0	5	MCA	Theory
5	20MCA35X	Elective–VI (with practice)	4	-	1	5	MCA	Theory+ Lab
6	20MCA36	Minor Project	-	-	2	2	MCA	Lab
		Total				**26**		

III Sem: Professional Core Electives

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ELECTIVE – IV (Networks)		
Sl. No.	**Course Code**	**Course Title**
1	20MCA331	Cloud Computing
2	20MCA332	Cyber Security
3	20MCA333	Web of Things

III Sem: Professional Core Electives

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ELECTIVE – V (Data Science)		
Sl. No.	**Course Code**	**Course Title**
1	20MCA341	Artificial Intelligence
2	20MCA342	Augmented and Virtual Reality
3	20MCA343	Deep Learning

III Sem: Professional Core Electives

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ELECTIVE – VI

(Software Solution Development–with Practice)

Sl. No.	Course Code	Course Title
1	20MCA351	PHP Framework based Full Stack Software Solutions
2	20MCA352	Java Framework based Full Stack Software Solutions
3	20MCA353	JavaScript Framework based Full Stack Software Solutions

2020 Scheme : Credit structure

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IV SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category
			L	T	P	Total		
1	20MCA41	Major Project	0	0	20	20	MCA	Lab
2	20MCA42	Technical Seminar	0	0	2	2	MCA	Lab
		Total				**22**		

Sub No: 295A
Scheme & Syllabus of I & II
MCA Program of 2022 Scheme

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Approved by AICTE, New Delhi

Scheme & Syllabus of
I & II Semester

2022 SCHEME

MASTER OF COMPUTER APPLICATIONS
2-Year Program

VISION

Leadership in Quality Technical Education, Interdisciplinary Research & Innovation, with a Focus on Sustainable and Inclusive Technology

MISSION

1. To deliver outcome based Quality education, emphasizing on experiential learning with the state of the art infrastructure.
2. To create a conducive environment for interdisciplinary research and innovation.
3. To develop professionals through holistic education focusing on individual growth, discipline, integrity, ethics and social sensitivity.
4. To nurture industry-institution collaboration leading to competency enhancement and entrepreneurship.
5. To focus on technologies that are sustainable and inclusive, benefiting all sections of the society.

QUALITY POLICY

Achieving Excellence in Technical Education, Research and Consulting through an Outcome Based Curriculum focusing on Continuous Improvement and Innovation by Benchmarking against the Global Best Practices.

CORE VALUES

Professionalism, Commitment, Integrity, Team Work, Innovation

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R.V. Vidyaniketan Post, Mysore Road
Bengaluru – 560 059

Scheme & Syllabus of
I & II Semester

2022 SCHEME

MASTER OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS

DEPARTMENT VISION

Pioneering in ICT Enabled Quality Education and Research with a focus on Sustainable and Inclusive Applications

DEPARTMENT MISSION

1. To adapt novel methodologies for quality education through experiential learning.
2. To empower students with continuous, holistic education, emphasizing on discipline, ethics and social commitment.
3. To become a vibrant knowledge center for research and software development.
4. To continuously build capacity steering towards industry- institute collaborative research and entrepreneurial competencies.
5. To utilize and develop free and open source software tools for sustainable and inclusive growth.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1 Practice software engineering principles and standards to develop software to meet customer requirements across verticals

PEO2 Contribute to build sustainable and inclusive applications using mathematical, simulation and meta heuristic models

PEO3 Demonstrate entrepreneurial qualities through individual competence and team work

PEO4 Achieve successful professional career with integrity and societal commitments leading to lifelong learning

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1 Solve real world computing system problems of various industries by understanding and applying the principles of mathematics, computing techniques and business concepts

PSO2 Design, test, develop and maintain desktop, web, mobile and cross platform software applications using modern tools and technologies

GLOSSARY OF ABBREVIATIONS

1.	AS	Aerospace Engineering
2.	BS	Basic Sciences
3.	BT	Biotechnology
4.	CH	Chemical Engineering
5.	CHY	Chemistry
6.	CIE	Continuous Internal Evaluation
7.	CS	Computer Science & Engineering
8.	CV	Civil Engineering
9.	EC	Electronics & Communication Engineering
10.	EE	Electrical & Electronics Engineering
11.	EI	Electronics & Instrumentation Engineering
12.	ET	Electronics & Telecommunication Engineering
13.	GE	Global Elective
14.	HSS	Humanities and Social Sciences
15.	IM	Industrial Engineering & Management
16.	IS	Information Science & Engineering
17.	L	Laboratory
18.	MA	Mathematics
19.	MBT	M. Tech in Biotechnology
20.	MCE	M. Tech. in Computer Science & Engineering
21.	MCN	M. Tech. in Computer Network Engineering
22.	MCS	M. Tech. in Communication Systems
23.	MDC	M. Tech. in Digital Communication
24.	ME	Mechanical Engineering
25.	MHT	M. Tech. in Highway Technology
26.	MIT	M. Tech. in Information Technology
27.	MMD	M. Tech. in Machine Design
28.	MPD	M. Tech in Product Design & Manufacturing
29.	MPE	M. Tech. in Power Electronics
30.	MSE	M. Tech. in Software Engineering
31.	MST	M. Tech. in Structural Engineering
32.	MVE	M. Tech. in VLSI Design & Embedded Systems
33.	N	Internship
34.	P	Projects (Minor / Major)
35.	PHY	Physics
36.	SDA	Skill Development Activity
37.	SEE	Semester End Examination
38.	T	Theory
39.	TL	Theory Integrated with Laboratory
40.	VTU	Visvesvaraya Technological University

POST GRADUATE PROGRAMS

Sl. No	Core Department	Program	Code
1.	BT	M. Tech in Biotechnology	MBT
2.	CS	M. Tech in Computer Science & Engineering	MCE
3.	CS	M. Tech in Computer Network Engineering	MCN
4.	CV	M. Tech in Structural Engineering	MST
5.	CV	M. Tech in Highway Technology	MHT
6.	EC	M. Tech in VLSI Design & Embedded Systems	MVE
7.	EC	M. Tech in Communication Systems	MCS
8.	EE	M. Tech in Power Electronics	MPE
9.	ET	M. Tech in Digital Communication	MDC
10.	IS	M. Tech in Software Engineering	MSE
11.	IS	M. Tech in Information Technology	MIT
12.	ME	M. Tech in Product Design & Manufacturing	MPD
13.	ME	M. Tech in Machine Design	MMD
14.	MCA	Master of Computer Applications	MCA

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MASTER OF COMPUTER APPLICATIONS

I SEMESTER MCA												
			Credit Allocation									
SL No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Total Credits**	**BoS**	**Category**	**CIE Duration (H)**	**Max Marks CIE**	**SEE Duration (H)**	**Max Marks SEE**
1.	22MAT11T	Mathematical Foundation for Computer Science	4	1	0	**5**	MAT	Theory	1.5	100	3	100
2.	22MCA12T	Linux Shell Scripting	3	1	0	**4**	MCA	Theory	1.5	100	3	100
3.	22MCA13TL	Computer Networks	4	0	1	**5**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
4.	22MCA14TL	Object Oriented Programming	4	0	1	**5**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
5.	22MCA15TL	Web Application Programming	4	0	1	**5**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
6.	22HSS16L	Ability Enhancement Course-I*	0	0	2	**2**	HSS	Lab	1.5	50	2	50
7.	22MCA17T	Basics of Programming**	2	0	0	**0**	MCA	Theory	1.5	50	-	-
						26						

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*Identified External Agency will conduct the classes and evaluate both CIE and SEE

Note: *Students are mandatorily required to get Two MOOC certification courses as recommended by HSS BoS, within I-IV Semester MCA and this is considered for the evaluation in course code 22HSS43. This is included in the HSS board.*

****Bridge Course:*** The Basics of Programming with course code 22MCA17T is a non-credit course offered to Non-Computer Science background students only.

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MASTER OF COMPUTER APPLICATIONS

II SEMESTER MCA												
			Credit Allocation									
SL No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Total Credits**	**BoS**	**Category**	**CIE Duration (H)**	**Max Marks CIE**	**SEE Duration (H)**	**Max Marks SEE**
1.	22MCA21T	Research Methodology and IPR	2	0	0	**2**	MCA	Theory	1.5	50	2	50
2.	22MCA22T	Design and Analysis of Algorithms	3	1	0	**4**	MCA	Theory	1.5	100	3	100
3.	22MCA23TL	Data Modeling	4	0	1	**5**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
4.	22MCA24TL	Cloud Native Fullstack Application Development-I	3	0	1	**4**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
5.	22MCA25XTL	Integrated Professional Elective- I	4	0	1	**5**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
6.	22MCA26XT	Professional Elective-II	3	1	0	**4**	MCA	Theory	1.5	100	3	100
7.	22MCA27L	Design Thinking*	0	0	2	**2**	MCA	Lab	1.5	50	2	50
						26						

* Societal Project - Design thinking course will be based on Sustainable Development Goals (SDGs)

List of Electives: II Semester

SL No	Course Code	Elective- I	SL No	Course Code	Elective-II
1.	22MCA251TL	Internet of Things	1.	22MCA261T	DevOps
2.	22MCA252TL	Data Science-I	2.	22MCA262T	Advanced Computer Networks
3.	22MCA253TL	Software Testing and Practices	3.	22MCA263T	Cryptography and Network Security
4.	22MCA254TL	2D and 3D Modeling	4.	22MCA264T	Digital Marketing

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MASTER OF COMPUTER APPLICATIONS

III SEMESTER MCA												
			Credit Allocation									
SL No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Total Credits**	**BoS**	**Category**	**CIE Duration (H)**	**Max Marks CIE**	**SEE Duration (H)**	**Max Marks SEE**
1.	22MCA31T	Software Engineering	3	0	0	**3**	MCA	Theory	1.5	100	3	100
2.	22MCA32TL	Modern Application Development	4	0	1	**5**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
3.	22MCA33TL	Cloud Native Fullstack Application Development-II	3	0	1	**4**	MCA	Theory + Lab	1.5 + 3	150	3 + 3	150
4.	22MCA34XT	Professional Elective-III	3	1	0	**4**	MCA	Theory	1.5	100	3	100
5.	22MCA35XT	Open Elective - I	3	0	0	**3**	MCA	Theory	1.5	100	3	100
6.	22MCA36L	Minor Project	0	0	4	**4**	MCA	Lab	3	100	3	100
7.	22MCA37L	Internship*	0	0	6	**6**	MCA	Lab	3	100	3	100
						29						

Six Weeks Internship to be completed during the intervening Vacation of II and III semesters

List of Electives: III Semester

SL No	Course Code	Elective- III	SL No	Course Code	Open Elective
1.	22MCA341T	Data Science-II	1.	22MCA351T	Sustainability and Society
2.	22MCA342T	Augmented Reality and Virtual Reality	2.	22MCA352T	Anthropology and Digital World
3.	22MCA343T	UI/UX	3.	22MCA353T	Media and Communication
4.	22MCA344T	Blockchain and Cyber Security	4.	22MCA354T	Philosophy and AI

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IV SEMESTER MCA												
			Credit Allocation									
SL No	**Course Code**	**Course Title**	**L**	**T**	**P**	**Total Credits**	**BoS**	**Category**	**CIE Duration (H)**	**Max Marks CIE**	**SEE Duration (H)**	**Max Marks SEE**
1.	22MCA41L	Project Work	0	0	15	**15**	MCA	Lab	1.5	100	3	100
2.	22MCA42L	Technical Seminar	0	0	2	**2**	MCA	Lab	1.5	50	2	50
3.	22HSS43L	Ability Enhancement Course-II	0	0	2	**2**	HSS	Lab		50	ONLINE	50
						19						

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MASTER OF COMPUTER APPLICATIONS

Credit Distribution for MCA 2022 Scheme

		SEM-I	SEM-II	SEM-III	SEM-IV	TOTAL CREDITS
SL No	**Course Type**	**Credits**				**Credits**
1.	Basic Science Course (BSC)	05	--	--	--	05
2.	Professional Core Course (PCC)	04	02	03	--	09
3.	Integrated Professional Core Course (IPCC)	15	14	09	--	38
4.	Professional Elective Course (PCE)	--	08	04	--	12
5.	Open Elective Course (OEC)	--	--	03	--	03
6.	Audit Course/ Ability Enhancement Course (AUD/AEC)	02	--	--	02	04
7.	Project / Internship	--	02	10	15	27
8.	Seminar	--	--	--	02	02
	Total	**26**	**26**	**29**	**19**	**100**

SEMESTER: I					
MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE(Theory)					
Course Code	**:**	**22MAT11T**	**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**4:1:0**	**SEE**	**:**	**100 Marks**
Total Hours	**:**	**52L+26T**	**SEE Duration**	**:**	**3.00 Hours**

UNIT-I	**10 Hrs**
Sets, Relations and Functions: Basics of set theory, Cartesian product of sets. Relations, Properties of relations, Zero-one matrices and directed graphs, Hasse diagram, Equivalence relations and partitions. Functions- types of functions, ceil function and the floor function, Function composition and Inverse function.	
UNIT-II	**10 Hrs**
Logic: Basic connectivity and Truth table, Logical equivalence, logical implications, Quantifiers – Predicates: Predicative logic, Free and Bound variables, Rules of inference, Consistency. Proofs of theorems-direct, indirect, and proof by contradiction.	
UNIT-III	**11 Hrs**
Engineering Optimization: Introduction to Operations Research, Linear Programming Problem-Formation, Classical optimization techniques-Simplex method. Transportation Model-North-west corner rule, Vogel's approximation method, Optimum solution using modified distribution method. Assignment Model-Hungarian method**.**	
UNIT-IV	**11 Hrs**
Statistics and Probability: Curve fitting by method of least squares, fitting of curves – polynomial, exponential, power function. Correlation and linear regression analysis. Basic concepts of probability, conditional probability, Bayes' theorem**.**	
UNIT-V	**10Hrs**
Probability Distributions: Random variables- discrete and continuous, probability mass function, probability density function, and cumulative density function. Binomial distribution, Poisson distribution, Exponential distribution, and Normal distribution.	

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand fundamental concepts of sets, relations, functions, logic, statistics and probability theory.
CO2	Apply fundamental concepts of functions, reasoning, statistics and probability theory for different domains in data science and machine learning
CO3	Analyze mathematical concepts like relational algebra, statistics, and probability theory to optimize the solutions of engineering problem.
CO4	Implement overall mathematical knowledge gained to demonstrate and analyze the problems arising in practical situations.

Reference Books	
1.	Ralph P Grimaldi, B.V.Ramana, Discrete and Combinatorial Mathematics, An applied Introduction, Pearson Education, 5th Edition, 2019, ISBN: 9789353433055, 9353433053.
2.	Kenneth H Rosen, Discrete Mathematics & its applications, McGraw-Hill, 8th Edition, 2021, ISBN: 9390727359 · 9789390727353.
3.	Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying E. Ye, "Probability and Statistics for Engineers and Scientists", Pearson, 9th Edition, 2021, ISBN-13: 9780136860969.
4.	Wayne L Winston, Operations Research: Applications and Algorithms, Thomson Learning, 4th Edition, 2004, ISBN 0-534-38058-1

Scheme of Continuous Internal Evaluation (CIE): 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30 marks), Video based seminar/presentation/demonstration (30 marks) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Rubric for CIE & SEE Theory courses					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1: Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2: Question 3 or 4	20
	Total Marks	**100**	5 & 6	Unit 3: Question 5 or 6	20
			7 & 8	Unit 4: Question 7 or 8	20
			9 & 10	Unit 5: Question 9 or 10	20
				Total Marks	**100**

SEMESTER: I					
LINUX SHELL SCRIPTING (Theory)					
Course Code	**:**	**22MCA12T**	**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**3:1:0**	**SEE**	**:**	**100 Marks**
Total Hours	**:**	**39L+26T**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	07 Hrs
The Unix/Unix Like Operating System architecture and commands: Unix Architecture, Features of UNIX, General purpose utility commands, Basic and advanced file attributes, File system. **Introduction to version control system:** git and its usage for managing code repositories. **Introduction to Shell Script:** Shell scripts, read, command line arguments, exit, variables, wildcards, escape characters logical operators and conditional operators	
UNIT–II	**08 Hrs**
Programming through Shell Script: if conditional, case conditional, expr computations and string handling, while looping, for looping, set and shift, trap interrupting a program, debugging shell scripts with set command, validation and data entry scripts, function: introduction, scope of variable, return codes. **Scripting Standards:** Scripts and naming convention, Script File Permission, Shell Script Format, Sequence of Script execution.	
UNIT–III	**08 Hrs**
Introduction to filters: pr: paginating files**,** head: Displaying the beginning of a file, tail: displaying the end of the file, cut: slitting a file vertically, paste: pasting files, sort: ordering a file, uniq, tr: translating characters. **Filters and regular expression: grep:** Searching for a pattern, Basic Regular Expression, Extended Regular Expression and egrep, types of grep. **sed**: stream editor, Line addressing, Context addressing, Text editing, Substitution. **awk**: Simple awk filtering, splitting a line into fields, printf, redirecting and expression, comparison, begin and end, built-in variables and arrays.	
UNIT–IV	**08 Hrs**
User Management: Adding a group, adding a user, user profiles, modifying and removing users **Process Management:** Process status, system processes, mechanism of process creation, Internal and External commands, process states and Zombies, killing processes with signals **Job scheduling:** Scheduling jobs with at and crontab. **Log Management**: Running script in background for tracking various log messages, tail with egrep and echo, Central logging (rsyslog)	
UNIT–V	**08 Hrs**
Database Administration and Backup: Backing up each database to a separate file, Backing up a single database, Backup all databases to a single file, schedule a backup to automatically back up a web portal or website data. **Real Time Practice:** Shell scripting to execute different commands on different remote servers, Automatic email alert generation about hardware resources, Automate installation of required git version using shell script, Shell script to backup file system **Introduction to Docker and Curl:** Brief introduction about docker and its usage while automating infrastructure management. **Introduction to Curl:** Automating user communication to and from servers using Curl	

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand how to write shell scripts from basic to advanced level
CO2	Analyze and Identify high-level steps such as verifying user input to automate repetitive tasks
CO3	Apply shell scripting techniques and standards using filters for pattern matching on plain text data and variety of system log files
CO4	Develop effective and interactive scripts using functional blocks, operating system and networking utilities to manage complex and repetitive tasks in real time scenarios

Reference Books	
1.	Sumitabha Das, Unix Concepts and Applications, McGraw Hill, 4th Edition, 2012, ISBN:978-0-07-063546-3
2.	Ganesh Naik, Learning Linux Shell Scripting, Packt Publishing, 2nd Edition, May 2018, ISBN:978-1788993197
3.	Narendra Kumar Reddy, Complete Bash Shell Scripting, Polu Packt Publishing , April 2020, ISBN: 9781800209695 https://www.packtpub.com/in/cloud-networking/complete-bash-shell-scripting-video
4.	Mokhtar Ebrahim, Andrew Mallett, Mastering Linux shell scripting, Packt Publishing, 2nd Edition, 2018, ISBN 9781788990554
5.	Imran Afzal, A Complete Course on Linux bash shell scripting with real life examples, Packt Publishing, July 2019, ISBN:9781838984083

Scheme of Continuous Internal Evaluation (CIE): 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding up to 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit...

Rubric for CIE & SEE Theory courses					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
	Total Marks	**100**	5 & 6	Unit 3:Question 5 or 6	20
			7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Total Marks	**100**

SEMESTER: I					
COMPUTER NETWORKS (Theory & Practice)					
Course Code	**:**	**22MCA13TL**	**CIE**	**:**	**100+50 Marks**
Credits: L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100+50 Marks**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT-I	**10 Hrs**
Introduction: Introduction, Uses of Computer Networks, Network Hardware, Network Software: Protocol Hierarchies, Design Issues for the Layers, Reference Models: The OSI Reference Model, The TCP/IP Reference Model, A Comparison of the OSI and TCP/IP Reference Models Physical Layer-Guided Transmission Media, Digital Modulation and Multiplexing	
UNIT-II	**10 Hrs**
Data Link Layer: Data link Layer Design issues, Error Detection codes, Sliding Window Protocols (Stop and Wait, Go-Back-N (GBN) and Selective Repetitive (SR)) **Medium Access Control:** The Channel Allocation Problem, Multiple Access Protocols, Ethernet	
UNIT–III	**12 Hrs**
The Network Layer: Network Layer Design issues, Routing algorithms- The Optimality Principal, Shortest Path Algorithm, Flooding, Distance Vector Routing, Link State Routing, Hierarchical routing, Congestion Control Algorithms, Quality of Service, Internetworking	
UNIT–IV	**10 Hrs**
The Network Layer in the Internet: The Network Layer in the internet- IP version 4 Protocol, IP version 6 protocol: The Main IPv6 Header, Extension Headers, Internet Control Protocols: ICMP, ARP, DHCP	
UNIT–V	**10 Hrs**
The Transport Layer: The Transport Service: Services Provided to the Upper Layers, Berkeley Sockets, Elements of Transport Protocols, Internet transport protocols- TCP: Introduction to TCP, The Service Model, Protocol, Segment Header, UDP **The Application Layer**: The Domain Name System, Electronic Mail, The World-Wide-Web, Streaming Audio and Video	

LABORATORY	
1.	Create a LAN with three or more nodes implementing star topology and demonstrate classful addressing
2.	Create a LAN using physical networks/virtual machine and install FTP server to demonstrate file transfer
3.	Demonstrate secured file transfer and computing over wired network and wireless network with SCP and SSH key based computing
4.	Demonstrate to calculate IP addresses using ipcalc
5.	Build DHCP server using dns-masq with and without MAC binding with IPV4 and IPV6
6.	Build DNS server for resolving the names and IP addresses
7.	Build a Firewall to Restrict Network Access using Firewall
8.	Demonstrate basic trouble shooting using ping, traceroute, ifconfig, nslookup, netstat and route
9.	Demonstrate multiple client server communication on different ports using netcat
10.	Demonstrate Proxy - Server setup for a web server and SSH port forwarding

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the fundamentals of computer networking and the concept of layered approach
CO2	Identify the design issues, services, interfaces and protocols for data flow in computer networks
CO3	Demonstrate the protocols and services designed for the layered approach
CO4	Analyze and evaluate the principles and protocols of computer networks

Reference Books	
1.	Andrew S. Tanenbaum, David J Wetherall, "Computer Networks", Pearson Education, Pearson Publication, 5th Edition, 2012, ISBN-1978-81-317-8757-1
2.	Behrouz A Forouzan, Firouz Mosharraf, "Computer Networks A Top-Down Approach", Tata McGraw-Hill Education Pvt. Ltd, 2011, ISBN 13: 9781259001567
3.	Peterson, Larry L., and Bruce S. Davie. Computer networks: a systems approach. Elsevier, 2012, 5th Edition, ISBN-13: 978-0-12-385059-1
4.	Stallings, William. Data and computer communications. Pearson Education India, 2007, 8th Edition, ISBN: 0-13-243310-9.

Scheme of Continuous Internal Evaluation (CIE) Theory: 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding up to 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding upto 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding upto 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

Scheme of Semester End Examination (SEE) Theory for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit**.**

Scheme of Semester End Examination (SEE) Laboratory for 50 marks :

SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
4	Laboratory	50	5 & 6	Unit 3:Question 5 or 6	20
	Total Marks	**150**	7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: I					
OBJECT ORIENTED PROGRAMMING (Theory & Practice)					
Course Code	**:**	**22MCA14TL**	**CIE**	**:**	**100 + 50 Marks**
Credits: L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100 + 50 Marks**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	**11 Hrs**
Object Oriented Programming: Introductions, OOP, classes, class attributes, instances, instance attributes, Constructor and Destructor, Encapsulation **Introduction to Python Programming Language:** Introduction to python, program output, input, comments, operators, variables and assignment, numbers, if statement, while loop, for loop, and the range ( )	
UNIT–II	**11 Hrs**
Data Types: Operations and methods on strings, tuples, lists, sets and dictionaries **Functions:** Built-in Functions: Lambda, MAP, Filters and User defined Functions **Magic Methods:** Magic method syntax, available methods	
UNIT–III	**10 Hrs**
Basics of Polymorphism and Inheritance: Operator and function overloading, Introduction to Inheritance, types of Inheritance, sub classing and scope, overriding methods **Modules and Packages:** What are modules, modules and packages, creation of packages, importing modules, importing packages **Introduction to Numpy module:** numpy basics, numpy data types, creation of ndarray, nested sequences, numpy array iteration, concatenation	
UNIT–IV	**10 Hrs**
Reading and Writing Files: Introduction to File operation, opening a File, Techniques for Reading Files, Writing Files. **Context Managers:** Context manager syntax, when you should write context managers **Error and Exceptions:** Introduction to exceptions in python, detecting and handling exceptions, exceptions as strings, raising exceptions, assertions, standard exceptions	
UNIT–V	**10 Hrs**
Decorators: Understanding Decorators, Decorator Syntax, Decorators Functions, Decorator classes. **Generators:** Understanding Generators, Generator syntax, Generator Examples **OOP for Database Programming:** Introduction, Architecture, Steps for Connecting Database, Basic Operations with Examples	

LABORATORY **Student should implement using Python Language. Apply Unit testing and integration testing (As per problem definition). Develop various test cases, execute them and analyze the test results**	
1.	Implement 10 operations on string and Tuple
2.	Implement 10 operations on sets and lists
3.	Demonstrate dictionary concepts for a given scenario
4.	Implement importing of user defined modules using Magic Methods
5.	Implement any two types of Inheritance
6.	Implement overloading concept
7.	Implement overriding concept
8.	Demonstrate any five-exception handling mechanism using files
9.	Write a python program to Insert, Search, and Retrieve data into Employee Database
10.	Write a program to create Fibonacci series using generators and stack the same with a decorator to find the time taken by the generator

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the basic concepts of object oriented programming
CO2	Identify and apply relevant object-oriented concepts in any real world scenario.
CO3	Utilize object-oriented concepts to solve any real world problem
CO4	Analyze solutions using OOPs concepts for real world applications

Reference Books	
1.	Hetland, Magnus Lie, Beginning Python: from novice to Professional, Apress, 3rd Edition, 2017, ISBN 978-1-4842-0029-2.
2.	Sneeringer, Luke, Professional Python, John Wiley & Sons, 2016, ISBN -978-1-119-07085-6
3.	Paul Gries, Jennifer Campbell, Jason Montojo, Practical Programming, SHROFF Publishers and Distributors Pvt, 3rd Edition, 2018, ISBN: 13:978935213681-0.
4.	Wesley J Chun, Core Python Programming, Pearson Education, 3rd Edition, 2012, ISBN 13: 978-0-13-267820-9.

Scheme of Continuous Internal Evaluation (CIE) Theory: 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding up to 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding up to 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

Scheme of Semester End Examination (SEE) Theory for 100 marks:
The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit**.**
Scheme of Semester End Examination (SEE) Laboratory for 50 marks :
SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory

RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
4	Laboratory	50	5 & 6	Unit 3:Question 5 or 6	20
	Total Marks	**150**	7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: I					
WEB APPLICATION PROGRAMMING (Theory & Practice)					
Course Code	**:**	**22MCA15TL**	**CIE**	**:**	**100 + 50 Marks**
Credits: L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100 + 50 Marks**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	**10 Hrs**
Introduction to Web Technologies: Internet, WWW, Web Browsers, Web Servers, URLs, MIME, HTTP, Security, the Web Programmers Toolbox. WAMP, LAMP, ZAMP, Client-Side Scripting versus Server-Side Scripting **Mark-up Language:** HTML5 tags- Formatting, Commenting, Code, Anchors, Backgrounds, Images, Hyper-links, Lists, Tables, Semantic Elements in HTML, Multimedia, Forms	
UNIT–II	**12 Hrs**
Front End Design: Cascading Style Sheet (CSS): Introduction to CSS – Basic syntax and structure, In-line Styles, Embedding Style Sheets, Linking External Style Sheets, Backgrounds, manipulating text, Margins and Padding, Positioning using CSS **Bootstrap:** Getting Started with Bootstrap- Mobile-irst design, Why Bootstrap, Including Bootstrap in your HTML file, The Bootstrap CDN, Overriding with custom CSS, Using the Bootstrap customizer, Deep customization of Bootstrap **Using the Base CSS:** Implementing the Bootstrap Base CSS, Headings, Body copy, Typographic elements, Emphasis inline elements, Alignment classes, Emphasis classes, Addresses, Blockquotes, Abbreviations, Lists, Tables, Basic styling, Buttons, Forms, Inline forms, Horizontal forms, Code, Images, Font families **Doing More with Components:** Jumbotron, Badges, Progress bar, Button groups	
UNIT–III	**08 Hrs**
Basics of JavaScript: Overview of JavaScript, Object orientation and JavaScript, Syntactic characteristics, Primitives, operations, and expressions, Screen output and keyboard input, Control statements, Object creation and modification, Arrays, Functions, Constructors, Pattern matching using regular expressions	
UNIT–IV	**11 Hrs**
XML: Introduction, syntax, Document structure, Document Type Definitions, Namespaces, XML schema, displaying raw XML documents **JSON:** Introduction-JSON Is a Data Interchange Format, JSON Is Programming Language Independent, JSON Syntax -JSON Is Based on JavaScript Object Literals ,Name-Value Pairs, Proper JSON Syntax, Syntax Validation, JSON as a Document, The JSON Media Type, JSON Data Types -Quick Look at Data Types, The JSON Data Types, The JSON Object Data Type, JSON Schema -Contracts with Validation Magic, Introduction to JSON Schema	
UNIT–V	**11 Hrs**
Document Object Model: The JavaScript Execution Environment, The Document Object Model, Elements Access in Java Script, Events and Event Handling, The DOM2 Event Model, DOM Tree Traversal and Modification **Data Visualization**: Getting Started with D3.JS, Using SVG to Create Images Using Code, Base tag, Basic elements, Positioning an element , Styling an element, Important SVG elements	

LABORATORY	
1.	Design a static web portal using HTML5 semantic elements, style using CSS
2.	Design a web page to demonstrate, customization of Bootstrap classes using CSS
3.	Develop an event countdown timer using HTML5, CSS/Bootstrap and JavaScript
4.	Design a JS program to show the stack implementation using Arrays
5.	Write a JS program to demonstrate any 4 methods of a. String object b. Date object c. Number Object
6.	Write a JS program to illustrate the following concepts considering appropriate scenario a. Different ways of creating objects and nested objects b. Different kinds of DOM events
7.	Design a form and validate the fields. Use regular expression to condition the fields
8.	Compose an XML file to store name, address, Email Id and phone number of three person and access the data using JavaScript, display the result by applying styles
9.	Design JSON document to store information about faculty in MCA Department, college affiliated to VTU. Make up sample data for 5 students. Access the values through JavaScript and store them in the table format
10.	Design a page to display complex shapes using D3.JS

Course Outcomes: After going through this course, the student will be able to	
CO1	Describe the basic constructs of the web concepts
CO2	Determining and comparing the relevant components that can be applied to a given problem
CO3	Apply the concepts to design and implement the web solutions for the given scenario
CO4	Analyze the web components in building an application

Reference Books	
1.	Robert W. Sebesta, Programming the World Wide Web, Pearson Education, 10th Edition, 2018, ISBN: 9780133775983.
2.	Lindsay Basset, Introduction to JavaScript Object Notation, O'Reilley Media, Inc., August 2015, 9781491929483.
3.	Aravind Shenoy, Ulrich Sossou, Learning Bootstra, O'Reilly Media, 2020, ISBN 978-1-78216-184-4.
4.	Matthew Huntington, D3.js Quick Start Guide, Packt Publishing, 2018, ISBN-13: 978-1789342383

Scheme of Continuous Internal Evaluation (CIE) Theory: 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding up to 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding up to 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

Scheme of Semester End Examination (SEE) Theory for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit**.**

Scheme of Semester End Examination (SEE) Laboratory for 50 marks :

SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
4	Laboratory	50	5 & 6	Unit 3:Question 5 or 6	20
	Total Marks	**150**	7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: I					
ABILITY ENHANCEMENT COURSE-I (Practice)					
Course Code	**:**	**22HSS16L**	**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:2**	**SEE**	**:**	**50 Marks**
Total Hours	**:**	**26 hrs / Semester**	**SEE Duration**	**:**	**2.00 Hours**

UNIT-I	**05 Hrs**
Communication Skills: Basics, Method, Means, Process and Purpose, Basics of Business Communication, Written & Oral Communication, Listening **Communication with Confidence & Clarity**: Interaction with people, the need, the uses and the methods, Getting phonetically correct, using politically correct language, Debate & Extempore. **Assertive Communication**: Concept of Assertive communication, Importance and applicability of Assertive communication, Assertive Words, being assertive	
UNIT-II	**06 Hrs**
Aptitude Test Preparation: Importance of Aptitude tests, Key Components, Quantitative **Aptitude** – Problem Solving, Data Sufficiency, Data Analysis - Number Systems, Math Vocabulary, fraction decimals, digit places, profit and loss, time and work, time, speed and distance, calendar, clock, permutations and combinations, probability etc. **Mental ability:** coding-decoding, blood relations, puzzle test, logical sequence of words	
UNIT-III	**05 Hrs**
Reasoning and Logical Reasoning: logic, statement- arguments, assumptions, courses of actions, conclusions, deriving conclusions from passages, logical puzzles, Analytical Reasoning, Critical Reasoning **Presentation Skills:** Discussing the basic concepts of presentation skills, Articulation Skills, IQ & GK, How to make effective presentations, body language, Rapport Building	
UNIT-IV	**05 Hrs**
Interview Skills: Questions asked and how to handle them, Behavioral, technical and HR Interviews, etiquette **Motivation and Stress Management:** Self-motivation, group motivation, leadership abilities, Stress clauses and stress busters to handle stress and de-stress; Understanding stress - Concept of sound body and mind, Dealing with anxiety, tension, and relaxation techniques. Individual Counseling & Guidance, Career Orientation. Balancing Personal & Professional Life	
UNIT –V	**05 Hrs**
Professional Practice: Professional Dress Code, Time Sense, Respecting People & their Space, Relevant Behavior at different Hierarchical Levels. Positive Attitude, Self-Analysis and Self-Management **Professional Ethics:** values to be practiced, standards and codes to be adopted as professional engineers in the society for various projects**.** Balancing Personal & Professional Life	

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand and solve problems covering Quantitative, verbal Ability and Logical Reasoning
CO2	Apply and enhance communication, leadership and interpersonal working skills with professional ethics
CO3	Inculcate problem solving, decision making, stress management skills for lifelong learning
CO4	Develop their potential and become confident to acquire a high degree of self

Reference Books	
1.	Arun Sharma, How to prepare for Quantitative Aptitude for CAT, McGraw Hill, 8th Edition, 2022, ISBN:978-93-53160-18-0
2.	R S Agarwal, Dr. R.S. Aggarwal, S Chand Publishing, 2022, ISBN: 978-9355012326
3.	R S Agarwal, A Modern Approach to Verbal and Non-verbal Reasoning, S Chand Publishing, 2018, ISBN:978-9352832163
4.	Kerry Patterson, Joseph Grenny, Ron McMillan, Crucial Conversation: Tools for Talking When Stakes are High, McGraw-Hill Publication, 3rd Edition, 2021, ISBN: 9780071772204
5.	Aptimithra: Best Aptitude Book, Ethnus, Tata McGraw Hill, 2014 ISBN: 9781259058738

Scheme of Continuous Internal Evaluation Laboratory (CIE): 40 + 10 = 50
Conduction of aptitude, Reasoning, communication skills, analysis and presentation (50 Marks), Test (50 Marks), adding upto 100 marks. Final marks will be reduced to 40 & Experiential Learning (10 Marks) adding up to 50 Marks
Semester End Evaluation (SEE); Theory (50 Marks) - SEE for 50 marks are executed by means of an examination. The duration of the SEE will be for 2 hours.

Lab Only Course with 50 Marks					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	Continuous evaluation by the course co-ordinators	50	The evaluation is individual for the student		
2	Test	50	1.	Aptitude and Reasoning (Problem Solving):	20
	Marks (Sl No 1+2)	**100**	2.	Communication Skills (Verbal, Non-Verbal presentation skill analysis)	20
	Reduced to	40		Viva voce	10
3	Experiential Learning	10			
	Total Marks	**50**		**Total Marks**	**50**

SEMESTER: I					
BASICS OF PROGRAMMING (Theory)					
Course Code	**:**	**22MCA17T**	**CIE**	**:**	**50 Marks**
L:T:P	**:**	**2*:0:0**	**SEE**	**:**	**---**
Total Hours	**:**	**26L**	**SEE Duration**	**:**	**---**

UNIT–I	**05 Hrs**
C Programming: Decision making, control structures and arrays: C Structure, Data Types, Input-Output Statements, Decision making with if statement, simple if statement, the if-else statement, nesting of if-else statements, the else-if ladder, the switch statement, the ?: operator, the goto statement, the break statement, programming examples The while statement, the do...while statement, the for statement, nested loops, jumps in loops, the continue statement, programming examples. One dimensional and two dimensional arrays, declaration and initialization of arrays, reading, writing and manipulation of above types of arrays	
UNIT–II	**05 Hrs**
Structures: Defining a structure, declaring structure variables, accessing structure members, structure initialization, copying and comparing structure variables, Operations on individual members, array of structures, structures within structures, structures and functions, Unions, size of structures	
UNIT–III	**06 Hrs**
Pointers: Pointers in C, Declaring and accessing pointers in C, Pointer arithmetic, Functions , Call by value, Call by reference, Pointer as function arguments, recursion, Passing arrays to functions, passing strings to functions, Functions returning pointers, Pointers to functions, Programming Examples	
UNIT–IV	**05 Hrs**
Digital Logic: Binary Systems and Combinational Logic Digital Computers and Digital Systems, Binary Numbers, Number Base Conversion, Octal and Hexadecimal Numbers, subtraction using r's and r-1 complements, Binary Code, Binary Logic, Digital Logic Gates **Computer Organization:** Basic Operational Concepts, Software, Performance, Multiprocessing and Multi computers, Machine Instruction: Memory Locations and Addresses, Memory Operations, Instructions and Instruction Sequencing, Addressing Modes, Interrupts	
UNIT–V	**05 Hrs**
Operating System: Operating-System Structure, Operating-System Operations, Overview of - Process Management, Memory Management, Storage Management, Protection and Security, Distributed Systems **CPU Scheduling:** Basic Concepts of CPU scheduling, Scheduling Algorithms-FCFS, SJF, Round Robin, Priority Scheduling	

*The Basics of Programming (**22MCA17T**) is a mandatory audit course **(non-credit course)** is offered to Non-Computer Science background students only.

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the basic concepts of programming, digital logic, organization, and operating system
CO2	Demonstrate the principles of logical programming and operating system management
CO3	Apply and analyse the programming and logical skills to real world problems
CO4	Evaluate and compare the methods, solutions and algorithms of basics of programming

Reference Books	
1.	Herbert Schild, C:The Complete Reference, McGraw Hill Education, 4th Edition, July 2017, ISBN-13: 978-0070411838
2.	Yashwant Kanetkar, Let us C, ,BPB Publications ,18th Edition, 2021, ISBN-13: 978-9391392994
3.	M.Morris Mano, Digital Logic and Computer Design" Pearson, 2016, ISBN-13: 978-9332542525
4.	Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts, Wiley India Pvt. Limited , 9th Edition, ISBN-BRV: !978-1-118-12938-8

Scheme of Continuous Internal Evaluation (CIE) Theory: 10 + 30 + 10 = 50

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks adding upto 20 marks. Final Quiz mark will be reduced to 10 marks

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 30 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (10), Video based seminar/presentation/demonstration (10) adding upto 20 marks. Final EL marks will be reduced to 10 Marks

Rubric for CIE & SEE Theory courses of 50 Marks			
RUBRIC for CIE			***RUBRIC for SEE***
SL.NO	**Contents**	**Marks**	**No SEE Examination for this bridge course**
1	QUIZZES – Q1 & Q2	10	
2	TESTS – T1 & T2	30	
3	Experiential Learning – EL1 & EL2	10	
	Total Marks	**50**	

SEMESTER: II					
RESEARCH METHODOLOGY AND IPR (Theory)					
Course Code	**:**	**22MCA21T**	**CIE**	**:**	**50 Marks**
L:T:P	**:**	**2:0:0**	**SEE**	**:**	**50 Marks**
Total Hours	**:**	**26L**	**SEE Duration**	**:**	**2.00 Hours**

UNIT–I	**06 Hrs**
Research Methodology: Introduction, Meaning of Research, Objectives of Research, Motivation in Research, Types of Research, Research Approaches, Significance of Research, Research Methods versus Methodology, Research and Scientific Method, Importance of Knowing how Research is Done, Research Process, Criteria of Good Research, Research Problem, Selecting the Problem, Technique Involved in Defining a Problem, Reviewing the literature, bringing clarity and focus to the research problem, improving research methodology, Developing a theoretical framework, Developing a conceptual framework, Writing about the literature reviewed	
UNIT–II	**05 Hrs**
Research Design: Meaning of Research Design, Need for Research Design, Features of a Good Design, Important Concepts Relating to Research Design, Different Research Designs, Basic Principles of Experimental Designs, Important Experimental Designs. Design of Sample Surveys: Introduction, Sample Design, Sampling and Non-sampling Errors, Sample Survey versus Census Survey, Types of Sampling Designs	
UNIT–III	**05 Hrs**
Interpretation and Report Writing: Meaning of Interpretation, Technique of Interpretation, Precaution in Interpretation, Significance of Report Writing, Different Steps in Writing Report, Layout. Types of Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing Research Reports	
UNIT–IV	**05 Hrs**
Intellectual Property: IP law basics, types of Intellectual Property, Agencies responsible for Intellectual property Registrations, foundations of trademark law, International trademark law, subject matter of copyright, International copy right Law, foundations of Patent law- patentability, design patents. International Patent law	
UNIT–V	**05 Hrs**
Protecting Software and Computer: Related Innovations: An overview, Case studies ,Software Patent vs Copyright, Guideline for computer – related invention in Europe and Japan, Case studies	

Course Outcomes: After going through this course, the student will be able to	
CO1	Identify the suitable research methods and articulate the research steps in a proper sequence for the given problem
CO2	Conduct literature survey, define the problem statement, and suggest suitable solution for the given problem and present in the format of the research paper like IEEE/ACM/Elsevier or a proof of concept
CO3	Analyze the problem and formulate the problem to develop methodology to conduct research
CO4	Apply Copy Right Act /Patent Act /Cyber Law/ Trademark / Plagiarism check to the given case and prepare the technical paper

Reference Books	
1.	C.R. Kothari, Gaurav Garg, "Research Methodology: Methods and Techniques", New Age International 4th Edition, 2018. ISBN-13: 978-9386649225
2.	Ranjit Kumar, "Research Methodology- A step-by- step guide for beginners". SAGE Pub 3rd Edition, 2011, ISBN: 9781849203005, 9781849203012
3.	Debirag E. Bouchoux, "Intellectual Property", Cengage learning, 4th Edition, ISBN-13: 978-1-111- 64857-2
4.	Prabuddha Ganguli, "Intellectual Property Rights", Tata McGraw-Hill Publishing Company Limited,ISBN-13:978-0-07-007717-1

Scheme of Continuous Internal Evaluation (CIE) Theory: 10+ 20 + 20 = 50

QUIZ: Quiz will be conducted in online/offline mode. Two quiz will be conducted. Each quiz will be evaluated for 10 Marks, adding up to 20 Marks. Final quiz marks will be reduced to 10 Marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding up to 100 Marks. Final test marks will be reduced to 20 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and plan to carry out research study after literature review. Publication of paper, Video based seminar / presentation / (10) adding upto 20 marks. Final EL marks will be reduced to 20 Marks.

Scheme of Semester End Examination (SEE) Theory for 50 marks: The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 10 marks. Student will have to answer one full question from each unit**.**

Rubric for CIE & SEE for Integrated Theory Course with Theory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES– Q1 & Q2	10	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	20	1 & 2	Unit 1: Question 1 or 2	10
3	Experiential Learning – EL1 & EL2	20	3 & 4	Unit 2: Question 3 or 4	10
			5 & 6	Unit 3: Question 5 or 6	10
			7 & 8	Unit 4: Question 7 or 8	10
	Total Marks	**50**	9 & 10	Unit 5: Question 9 or 10	10
				Total Marks	**50**

SEMESTER: II					
DESIGN AND ANALYSIS OF ALGORITHMS (Theory)					
Course Code	**:**	**22MCA22T**	**CIE**	**:**	**100 Marks**
L:T:P	**:**	**3:1:0**	**SEE**	**:**	**100 Marks**
Total Hours	**:**	**39L+26T**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	**08 Hrs**
Fundamentals of Algorithms and Divide and Conquer technique: Notion of Algorithm, Review of Asymptotic Notations, Recursive functions using stack, Mathematical Analysis of Non-Recursive and Recursive Algorithms **Divide and Conquer**: Binary Search, Merge Sort, Quick Sort and its performance.	
UNIT–II	**08 Hrs**
Decrease-and-Conquer & Greedy Method **Decrease and Conquer** : Insertion Sort, Topological Sorting, Depth First Search using stack, Breadth First Search using Queue **Greedy Method :** Representation of Graphs, Knapsack Problem, Minimum-Cost Spanning Trees: Prim's Algorithm, Kruskal's Algorithm; Single Source Shortest Paths	
UNIT–III	**08 Hrs**
Space and Time Trade Offs and Limitations of Algorithmic Power **Space-Time Tradeoffs:** Introduction, sorting by Counting, Input Enhancement in String Matching. **Limitation of Algorithmic Power:** Lower-Bound Arguments, Decision Trees, P, NP, and NP-Complete Problems, Challenges of Numerical Algorithms.	
UNIT–IV	**07 Hrs**
Dynamic Programming: Warshall's Algorithm, Floyd's Algorithm for the All-Pairs Shortest Paths Problem, 0/1 Knapsack, The Traveling Salesperson problem.	
UNIT–V	**08 Hrs**
Backtracking and Branch - Bound Technique Introduction to trees, tree traversal techniques **Backtracking:** n – Queens problem, Hamiltonian Circuit Problem, Subset – Sum Problem **Branch and Bound**-Assignment Problem, Travelling Salesman Problem	

Course Outcomes: After going through this course, the student will be able to	
CO1	Identify the data structures, paradigms and approaches used in algorithms and its impact in practice
CO2	Classify different computational models (e.g., divide-and-conquer), order notation and various complexity measures (e.g., running time, disk space) for real world applications
CO3	Apply relevant data structures and algorithm techniques to design efficient solutions for different applications
CO4	Analyze and evaluate the algorithms based on the data structures used, order of notation and performance metrics

Reference Books	
1.	Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Person Education, 3rd Edition, 2016, ISBN-13: 9780321358288
2.	Ellis Horowitz,Sanguthevar Rajasekaran,Sartaj Sahni, "Fundamentals Of Computer Algorithms", Galgotia Publications, 2nd Edition, 2004, ISBN 13: 9788175152571
3.	Rod Stephens, "Essential Algorithms A Practical Approach to Computer Algorithms", Wiley, 2013, ISBN: 978-1-118-61210-1
4.	Rajesh K. Shukla, "Analysis and Design of Algorithms A Beginner's Approach", Wiley Edition: 2015, ISBN 13: 9788126554775

Scheme of Continuous Internal Evaluation (CIE): 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit...

Rubric for CIE & SEE Theory courses

RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
	Total Marks	**100**	5 & 6	Unit 3:Question 5 or 6	20
			7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Total Marks	**100**

SEMESTER: II					
DATA MODELING (Theory & Practice)					
Course Code	**:**	**22MCA23TL**	**CIE**	**:**	**100+50 Marks**
L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100+50 Marks**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	10 Hrs
Introduction to Databases **Database Languages and Architecture** :Introduction to data, information, databases, database management system; Characteristics of database approach, Data models, Schema and instances, Three schema architecture and Data Independence, Database Languages and Interfaces, Database System Environment, Centralized and Client/ Server Architectures of DBMSs **Conceptual Data Modeling:** A Sample Database Application, Entity Types, Entity Sets, Attributes, Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types, Refining the ER Design for the Company Database, ER Diagrams, Naming Conventions, and Design Issues	
UNIT–II	**11 Hrs**
Relational Model: Relational Model Concepts, Relational Model Constraints and Relational Database Schemas and Keys, Update Operations, Transactions, and Dealing with Constraint Violations, Relational Database Design Using ER-to-Relational Mapping **Structured Query Language:** Data Definition and Data Types, Specifying Constraints in SQL, Basic Retrieval Queries in SQL, INSERT, DELETE, and UPDATE Statements in SQL, More Complex SQL Retrieval Queries-Nested Queries, Tuples, and Set/ Multi set Comparisons, exists and unique, join tables and outer joins, aggregate functions, Schema Change Statements in SQL **Normalization:** Informal Design Guidelines for Relation Schemas, Functional Dependencies, Normal Forms Based on Primary Keys, General Definitions of Second and Third Normal Forms, Boyce-Cod Normal form	
UNIT–III	**10 Hrs**
Transaction Concepts: Introduction to Transaction Processing, Transaction and System Concepts, Desirable Properties of Transactions **Semantic Data Modeling: Introduction –** Mind the Semantic Gap **Semantic Modeling Elements-** General Elements, Common and Standardized Elements **Semantic Model Development:** Development Activities, vocabularies, Patterns, and Exemplary Models	

UNIT–IV	11 Hrs
MongoDB: SQL and NoSQL evolution, MongoDB key characteristics and use cases, MongoDB configuration and best practices, Reference documentation **Scheme Design and Data Modeling : Data modeling,** MongoDB scheme design, Modeling data for atomic operations Modeling relationships, Connecting to MongoDB using Python **MongoDB CRUD operations : CRUD using the shell-** Administration, MapReduce in the mongo shell, Aggregation framework, Securing the Shell	
UNIT–V	**10 Hrs**
Advanced Querying: MongoDB CRUD operations: CRUD in Mongoid, CRUD using the Python driver, Comparison operators, Update operators, Smart querying **Aggregation:** Why Aggregation**,** Aggregation operators, Expression operators, Limitations **Indexing:** Index types- single field indexes , compound indexes	

LABORATORY	
Exercise 1	Design, Create and Implement the relational databases for any one of the Domains like Tourism, Human Resource Management, Debris Management and Others **Note :** Minimum Six (6) Queries to be executed including nested queries
Exercise 2	Design, Create and Implement the relational databases for any one of the Domains like Health Care, Energy, Agriculture, Telecom and others **Note :** Minimum Six (6) Queries to be executed including joins
Exercise 3	Create and implement CRUD operations using MongoDB for any one of the domains. Telecom, Tourism, Human Resource Management and Others **Note** : Minimum Six (6) Queries to be executed
Exercise 4	Create and implement CRUD operations using MongoDB for any one of the domains. Health Care, Energy, Agriculture **Note** : Minimum Six (6) Queries to be executed
Exercise 5	Implement an interface to perform CRUD operations in MongoDB using Python Driver for any one of the Domain listed in the exercises

Reference Books	
1.	RamezElmasri, Shamkant B. Navathe, Fundamentals of Database Systems, Pearson Addison Wesley, 6th Edition, 2011, ISBN 13: 978-0-136-08620-8
2.	Raghu Ramakrishnan, Johannes Gehrke, Database Management System, Mc Graw-Hill, 3rd Edition, 2014, ISBN-13:978-8131769591
3.	Alex Giamas, Mastering MongoDB 3.x,Packt Publishing,Kindle Edition, 2017 ISBN 978-1-78398-260-8
4.	Panos Alexopoulos, Semantic Modeling for Data,O'Reilly Media, Inc.First Edition, 2020, ISBN 9781492054276

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the fundamental concepts of structured, unstructured and semantic data models
CO2	Apply suitable data model concept to solve the given problem
CO3	Analyse relational and non-relational data model to check the performance of the data models with respect to design and manipulations
CO4	Design and implement suitable data model for any given real time scenarios

Scheme of Continuous Internal Evaluation (CIE) Theory: 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding up to 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding up to 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

Scheme of Semester End Examination (SEE) Theory for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit**.**

Scheme of Semester End Examination (SEE) Laboratory for 50 marks :

SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
4	Laboratory	50	5 & 6	Unit 3:Question 5 or 6	20
	Total Marks	**150**	7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: II					
CLOUD NATIVE FULLSTACK APPLICATION DEVELOPMENT-I (Theory & Practice)					
Course Code	**:**	**22MCA24TL**	**CIE**	**:**	**100 + 50 Marks**
Credits: L:T:P	**:**	**3:0:1**	**SEE**	**:**	**100 + 50 Marks**
Total Hours	**:**	**39L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	**08 Hrs**
Object Oriented Design: Introduction to Object-Oriented Concepts, How to Think in Terms of Objects, The Anatomy of a Class, Class Design Guidelines, Designing with Objects **Inheritance:** Mastering Inheritance and Composition, Designing with Interfaces and Abstract Classes, Building Objects and Object-Oriented Design, Design Patterns, The SOLID Principles of Object-Oriented Design	
UNIT–II	**08 Hrs**
Java Fundamental: Applications of Java Programming, Conditional and Control Statements, Arrays, String Handling, Classes, Objects and Methods, Inheritance, super keyword. Interface, Exception Handling **Threads:** The Thread Class and Runnable Interface, Creating Thread, Creating Multiple Threads, Thread Priorities, Synchronization, using Synchronization Methods, Thread Communication using notify(), wait() and notify All(), suspending, Resuming and stopping Threads	
UNIT–III	**08 Hrs**
Java Advanced Programming: Java Concurrency package, Java Generics: Generics Fundamentals Bounded Types, Generic Methods, Generic Constructors, Some Generic, Restrictions. Collections: Collections Overview, The Collection Interfaces, The collection Classes. The Arrays Class. Lambda Expressions, Java Memory Management **Java Design Patterns**: Creational, Behavioral and Structural patterns	
UNIT–IV	**07 Hrs**
RESTful API: Java APIs For JSON Processing, Introduction To the Basics of RESTful Architecture Design Strategy, Guidelines, Best Practices, Essential RESTful API Patterns	
UNIT–V	**08 Hrs**
Advanced RESTful API: Patterns, Microservice API Gateways, RESTful Services API Testing and Security, RESTful Service Composition for Smart Applications RESTful API Design Tips	

LABORATORY	
1.	Write a Java program to demonstrate the concepts Encapsulation, Inheritance & Multiple Inheritance
2.	Complete the following: 1. Create a package named shape. 2. Create some classes in the package representing some common shapes like Square, Triangle, and Circle. 3. Import and compile these classes in other program.
3.	Write a Java program to demonstrate the concepts i)Abstraction, Run Time Polymorphism
4.	Write a Java programs to demonstrate the concepts of design patterns.
5.	Write a Java program that demonstrated the Thread Life Cycle
6.	Write a Java code to demonstrate producer & consumer problems using thread wait & notify methods.
7.	Write a Singleton class which is thread safe and immutable.
8.	Using Java Generics demonstrates below concepts using Java program i) Type wildcards with Java Generics
9.	Build portal RESTful web API to demonstrate to create a web resource which can be accessed using REST URI's and demonstrate the concept of GET, POST, PUT & DELETE
10.	Build portal RESTful web API to demonstrate below concepts i) Write a Web API to demonstrate the concepts of security using basic Oauth2

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand Object Oriented Design concepts
CO2	Identify the Objects, patterns and services in/ for real-time applications
CO3	Apply the concept of Objects, patterns and services for real-time applications
CO4	Analyze solutions using OOPs concepts for real world applications

Reference Books	
1.	Matt Weisfeld, Object-Oriented Thought Process, Addison-Wesley Professional, 5th Edition, 2019, ISBN: 9780135182130
2.	Jeff Friesen, Java Threads and the Concurrency Utilities, Apress , ISBN: 9781484217009
3.	Ian F. Darwin, Java Cookbook, O'Reilly Media, Inc., 4th Edition, ISBN: 9781492072584
4.	Bogu, Mohanram Balachandar, RESTful Java Web Services, Packt Publishing, 3rd Edition, 2017, ISBN: 9781788294041

Scheme of Continuous Internal Evaluation (CIE) Theory: 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding upto 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding up to 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

Scheme of Semester End Examination (SEE) Theory for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit**.**

Scheme of Semester End Examination (SEE) Laboratory for 50 marks :

SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
4	Laboratory	50	5 & 6	Unit 3:Question 5 or 6	20
	Total Marks	**150**	7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: II					
INTERNET OF THINGS (Theory & Practice)					
Course Code	**:**	**22MCA251TL**	**CIE**	**:**	**100 + 50 Marks**
Credits: L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100 + 50 Marks**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	10 Hrs
Introduction to Internet of Things: Fundamentals of Electronics and devices for Internet of Things: Rectification process, Diode characteristics, Digital electronics, Transistor behaviour and Oscillators Physical and Logical design of IoT Technologies that enable Internet of Things Applications and Use cases, IoT Deployment Levels. Network and Communication, Standards related to Internet of Things, Protocols in Internet of things	
UNIT–II	**10 Hrs**
Programming with Arduino: Understanding the eco system of Arduino, Pinout configuration, Digital input and output, Analog input and output, working with sensors and actuators. Arduino serial communication. Communication interfaces (SPI and I2C) wired and wireless communication with Arduino using bluetooth modules	
UNIT–III	**10 Hrs**
Programming with Raspberry Pi: Understanding the eco system of Raspberry Pi3/Pi4, Pinout configuration, python modules like Rpi.GPIO and gpiozero. Digital input and output, working with sensors and actuators. Raspberry Pi serial communication. Communication interfaces (SPI and I2C).wired and wireless communication with raspberry Pi. Serial communication from raspberry Pi3 to Arduino and vice versa. Monitoring and Controlling between raspberry pi.	
UNIT–IV	**10 Hrs**
Programming with esp32: Understanding the eco system of esp8266/esp32, pinout configuration, Digital, Analog input and output, working with sensors and actuators. communication from raspberry Pi to nodeMCU/esp32, Network and web stack configuration with esp32, wireless communication using esp32 about the sensor status and controlling actuators remotely.	
UNIT–V	**12 Hrs**
IoT Application Development: Integrating sensors with IoT Dashboards and micro services IoT Platforms design methodology: Introduction to ten steps design methodology Introduction to Flow based IoT Dashboard: Fundamentals of NodeRED, creating basic dashboard Introduction to MQTT based IoT Dashboard: setup and configuration of dashboard like Things board Introduction to hosted IoT dashboard services like Adafruit io or thing board hosted service. IoT alert integration: alert integration in the form of email, tweets or any social media post.	

LABORATORY	
Practice Lab : Fundamentals of Electronics using SEELab3 kit and Introduction to variety of devices and development boards used to develop IoT Applications Full wave rectifier using PN junction : Refer Section 3.3 in the SEElab3 kit manual Diode V-I functional analysis Refer Section 3.13 in the SEElab3 kit manual Logic gates : Refer Section 3.11 in the SEElab3 kit manual PNP & NPN transistor nature : Refer Section 3.13 and 3.15 in the SEElab3 kit manual IC555 oscillator :Refer Section 3.6 in the SEElab3 kit manual Identifying the IoT Kit elements : sensors , actuators and development boards and other accessories Study about the principle of operations, operating conditions, cost, tolerance and durability study	
1.	Write a program with Arduino UNO board to calculate the distance of a obstacle based on the Ultrasonic sensor inputs. If the distance calculated is less than a certain value turn on a buzzer with an LED in ON state and display the distance in serial monitor
2.	Write a program with Arduino UNO to indicate the level of temperature using the LEDs indicating the low, medium and high values of temperature (Red, Blue and Green) OR Write a program with Arduino UNO to implement the interactive traffic signal.
3.	Write a program with Arduino UNO board to control servo motor based on potentiometer inputs **OR** to control a mini water pump based on water levels in a container **OR** Demonstrate HC-05 module for controlling Arduino with Bluetooth using Serial Communication integrating any mobile app.
4.	Write an interactive python script on Raspberry Pi3 to implement the serial communication from Raspberry Pi to Arduino or vice versa with any one sensor and actuator from the following components a) LED b) Buzzer c) Temperature and humidity sensor d) LDR sensor
5.	Write a python script on Raspberry pi to control servo motor or DC Motor based on the Potentiometer inputs or button switch inputs. OR change the color of RGB LED / Bulb based on the potentiometer inputs
6.	Develop python script to read water temperature, and water calculate water level in a container using Ultrasonic sensor and control the mini water pump. OR Develop a python script to calculate water consumption bill based on the water flow sensor inputs
7.	Write a micropython or arduino program with esp32 based NodeMCU board to calculate the distance of an obstacle based on the Ultrasonic sensor inputs. If the distance calculated is less than a certain value turn on LED
8.	Write an arduino script with esp32 based nodemcu board to operate a 4 channel relay and control evices connected to relay, demonstrating minimal home automation
9.	Develop a digital scale based on esp32 with Load Cell and HX711 Amplifier
10.	IoT dashboard setup and configuration Integrate Things Board / node-red IoT dashboard with any two sensor / actuator on PC or Rpi4 **OR** Integrate Adafruit or similar hosted IoT Dashboard with arduino, RaspberryPi and any sensor / actuator. **OR** Demonstrate publish subscribe communication model using esp32 or RaspberryPi and sensors/actuators **OR** Demonstrate alert service integration to any IoT application based on esp32 or RaspberryPi

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the fundamentals of electronics and hardware devices required for IoT including deployment levels, Network protocols and standards
CO2	Comprehend various development boards, sensors, actuators, architecture of Arduino, Raspberry Pi, esp32 with Arduino IDE or other IDE
CO3	Interact with Arduino, Raspberry Pi, esp32 using python, JavaScript and c/c++ to program the devices (sensors and actuators) to develop an integrated system
CO4	Design, Setup, Configure and Develop IoT Applications (Dashboards) and integrate several essential micro service like social media notification, email, push notifications including visualization of IoT Data

Reference Books	
1.	ArshdeepBahga, Vijay Madisetti, Internet of Things: A Hands-on Approach, Orient Blackswan Private Ltd, July 1st 2015, ISBN : 8173719543
2.	Wizardry, Exploring Arduino: Tools and Techniques for Engineering, WILEY, 1st Edition, ISBN-10: 1118549368, ISBN-13: 978-1118549360
3.	Elector, The Official ESP32 Book, ISBN : 978-1-907920-63-9
4.	The Official Raspberry Pi Handbook by The Magpi Magazine, 2023
5.	Maneesh Rao, Internet of Things with Raspberry Pi 3, Pack Publihing, April 2018 ISBN: 9781788627405
6.	Simon Monk, Programming the Raspberry Pi, McGraw Hill TAB, 3rd Edition, July 2021, ISBN-13: 978-1264257355

Scheme of Continuous Internal Evaluation (CIE) Theory: 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding up to 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding up to 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

Scheme of Semester End Examination (SEE) Theory for 100 marks:
The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit**.**
Scheme of Semester End Examination (SEE) Laboratory for 50 marks :
SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
4	Laboratory	50	5 & 6	Unit 3:Question 5 or 6	20
	Total Marks	**150**	7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: II					
DATA SCIENCE – I (Theory & Practice)					
Course Code	**:**	**22MCA252TL**	**CIE**	**:**	**100+50**
Credits: L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100+50**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT-I	10 Hrs
Introduction to Data Science and Exploratory Data Analysis: Data Science, Brief History of Data Science, Increasing attention to data science, Fundamental fields of study to data science, Data science and Related Terminologies, Types of Analytics, Application of Data Science, Data Science Process Model **Introduction to Exploratory Data Analysis**: Steps in data preprocessing, Understanding the data - Steps involved in EDA using Python Programming, looking at the data, visualizing the data, Treatment of Outliers, Data visualization using Python-Matplotlib Library, Seaborn Library, Dimensionality Reduction, Independent and Dependent Variables	
UNIT-II	**11 Hrs**
Machine Learning and Supervised Learning Models: Types of Machine learning algorithms, Supervised and Unsupervised Learning Algorithms, Supervised Learning algorithm, Unsupervised learning algorithm, Overfitting and under fitting, correctness, The bias-variance tradeoff, Feature Extraction, and selection **Supervised Learning Algorithms**: K-Nearest Neighbors, Similarity Based on Distance Function, KNN Model Building , Model performance measures Linear Regression, Building linear regression, Interpretation of Linear Regression coefficients, Validation of Linear regression ,Decision Tree, Tree Structure, Criteria for splitting decision node	
UNIT-III	**11 Hrs**
Ensemble Methods and Unsupervised Learning: Ensemble methods, Bias Variance Trade off, Random Forest as ensemble technique, Control Parameters, out of bag error rate, Tuning the Random Forest, Variable Importance Plot, Model Performance Measures **Unsupervised Learning:** Introduction, Association Rule Mining, Clustering, K Means clustering	
UNIT-IV	**10 Hrs**
Text Analytics and Artificial Intelligence **Text Analytics:** Introduction, Unstructured data, word cloud, sentiment analysis , web and social media analytics **Artificial Intelligence and Deep Learning :** Introduction, Application of Artificial Intelligence, Classification of Artificial Intelligence, Difference between AI and Deep Learning	
UNIT –V	**10 Hrs**
Deep Learning: Neural Networks- Perceptron, Feed Forward Neural networks, Back Propagation, Tensor, Layer Abstraction, Linear Layer, NN as sequence of layers, Loss and optimization, Other activation functions, SoftMax and Cross entropy, Dropout , Working of Deep Learning, Convolutional Neural Networks **Artificial Neural Networks**: Application of ANN, ANN model building, Steps in ANN model building, Model Performance Measures, Types of ANN	

LABORATORY	
1.	Consider the automobile dataset and perform exploratory data analysis. a. Identify the dimension, structure, and summary of the data set b. Preprocess the dataset and treat them (like missing values, 'na', ?). Justify the treatment c. Plot the histogram for continuous variables (at least two) to analyze the data. d. Draw a violin plot do describe the distribution of a numerical variable to analyze the data. e. Recognize the outliers using box plot (Display the box plot before and after outlier treatment) f. Display a heat map to display the relationship among the attributes g. Standardize the continuous variable (if any)
2.	For the data set in Q1, a. Show the distribution of continuous variables using histogram Identify the relationship between two continuous variables using scatter plot c. Find and display the frequency of the categorical values using count plot d. Apply point plots to display one continuous and one categorical variable e. #Question 1b has to be performed before 2a
3.	Consider the health care dataset that consists of several imaging details from patients that had a biopsy to test for breast cancer. The variable diagnosis classifies the biopsied tissue as M = malignant or B = benign. Describe and pre-process the dataset. Use KNN supervised learning model to predict Diagnosis using texture_mean and radius_mean . Analyze the model using different k values and display the performance of the model
4.	Consider the student_performance dataset. Predict the student performance as "Pass" or "Fail" by implementing a decision tree. Perform data preprocessing and visualize the data. Identify the important feature affecting the student performance and analyze the efficiency of the decision tree using different metrics. Plot the decision tree. .
5.	For the dataset in Q4, apply random forest algorithm to predict the student performance. a. Plot the important variables using seaborn b. Tune the random forest for training and test data based on best parameters and implement it c. Analyze the model performance and display the output
6.	For the market basket dataset, apply apriori algorithm and identify the best rules based on support and confidence values.
7.	For the Mall-Customers dataset Implement k-means clustering algorithm and visualize the clusters.
8.	Consider the given text dataset. Implement different text processing techniques and identify the most important keywords from the text. Display a word cloud from the same.
9.	Consider the iris dataset and apply the Multilayer perceptron to classify the type of the flower. Analyze the performance of the perceptron and display the output. .
10.	Consider the MNIST data set and implement CNN architecture to identify the handwritten images. Optimize the model and display the output.

Note : Students will be given with different case studies and scenario's during examination

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the need and fundamental concepts of data science in real world applications
CO2	Identify and apply the relevant data science concept for given scenario
CO3	Demonstrate the different data science concepts for various domains like education, business, healthcare etc.
CO4	Evaluate and analyze the performance of the models for real world applications

Reference Books	
1.	B Uma Maheswari, R Sujatha, Introduction to Data Science Practical Approach with R and Python , Wiley Publications, ISBN-: 9789354640506 , ISBN-13: 9789354640513 (EBook)
2.	Joel Grus, Data Science from Scratch, First principles with Python , O'Reilly, 2nd Edition, ISBN : 9789352138326
3.	Laura Igual , Santi Seguí, Springer Publications, Introduction to Data Science- A Python Approach to Concepts, Techniques and Applications, ISSN: 1863-7310 ISSN 2197-1781 (electronic)
4.	Sayan Mukhopadhyay, Advanced Data Analytics Using Python, Apress, ISBN-13 (pbk): 978-1-4842-3449-5 ISBN-13 (electronic): 978-1-4842-3450-1

Scheme of Continuous Internal Evaluation (CIE) Theory: 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding upto 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding up to 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

Scheme of Semester End Examination (SEE) Theory for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit**.**

Scheme of Semester End Examination (SEE) Laboratory for 50 marks :

SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2: Question 3 or 4	20
4	Laboratory	50	5 & 6	Unit 3:Question 5 or 6	20
	Total Marks	**150**	7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: II					
SOFTWARE TESTING AND PRACTICES (Theory and Practice)					
Course Code	**:**	**22MCA253TL**	**CIE**	**:**	**100 + 50 Marks**
L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100 + 50 Marks**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	**10 Hrs**
Introduction to software testing -Definitions, Test Cases, Test case design techniques, Preparing a Test Plan, Levels of Testing, Software testing life cycle, Software testing methodologies: Waterfall testing, Agile Testing, Iterative testing , QA, QC & Testing Case study- Develop test cases for any real world application using test case description template	
UNIT–II	**10 Hrs**
Test Automation- Need of Automation Testing, Refactoring, Continuous Improvement, Difference between Manual and Automation testing, Choosing right tools, Test Automation Architecture(SUT), Automation Frameworks	
UNIT –III	**12 Hrs**
Introduction to JMeter- Why JMeter, Configuring JMeter Components of JMeter - Test Plan, Thread Groups, Controllers, Samplers(FTP,HTTP/HTTPS,JDBC), Listeners, Timers, Assertions, Configuration Elements, Pre-Processors and Post-Processors, Collectors	
UNIT –IV	**10Hrs**
Submitting Forms and Managing Sessions- Capturing simple forms(Check boxes, Radio buttons, File uploads/File Downloads, Posting and Reading JSON data, Managing sessions with cookies and URL rewriting	
UNIT –V	**10Hrs**
Types of Testing using JMeter- Performance Testing(Load/Stress testing), Distributed Testing, Database Testing, API Testing, Security Testing, Test Execution and Reporting	

LABORATORY	
Note: Students are required to create a Test plan, Configure test scenarios, Run the test, Analyze the results and Generate reports for the following Lab programs. Based on the result analysis Iterate and optimize the testing process.	
1.	Demonstrate the concept of Single and Multiple threads simulating concurrent user actions such as logging in, browsing pages and submitting forms. Analyze response times, throughput and error rates under different load levels
2.	Demonstrate Assertions by sending parameter values to the database and assert the response code for both successful and failure cases
3.	Demonstrate pre-processor and post processor concept in the following Scenario a. Add data to Sampler using Pre-processor for an HTTP request b. Validate all the status codes generated from Sampler page using RegEx (Regular Expression Extractor) of Post-processor
4.	Demonstrate the use of Simple and Modular Controllers and Listeners for the following scenario a. A sampler to store the sampler request whose data can be extended outside to other samplers b. A container that provides values to all the sampler within the thread group
5.	Perform database load testing to measure the performance under database load. Configure JMeter to send SQL queries to the database server and monitor the response times. Analyze the query execution times, throughput, and resource utilization to identify any performance issues in the database layer.
6.	Consider a web application and perform load testing under the following conditions - Normal and peak load conditions.
7.	Set up a distributed testing environment using JMeter to distribute the load across multiple machines. Configure a master-slave setup where the master controls and coordinates the load testing activities across multiple slave instances.
8.	Demonstrate response codes validations(Eg:200, 300, 400, 500) for different API calls
9.	Demonstrate the concept of collection by implementing the CRUD operations on a website in which all the API calls are the input to the other call.(Eg: GET method's response value should be input for the POST method).
10.	Demonstrate multipart request with file upload feature for various file type extensions(.pdf,.xlsx,.csv,.json)

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the basic concepts of Automation testing
CO2	Identify and apply relevant automation testing techniques suitable for a real world scenario
CO3	Demonstrate various types of testing using JMeter
CO4	Analyze the test result and automation process for real world applications

Reference Books	
1	Paul C. Jorgensen, "Software Testing, A Craftsman's Approach", Auerbach Publications, 4th Edition, First Indian Reprint, 2014, ISBN-13:9781466560680
2	Bayo Erinle, Performance Test with JMeter, PACKT Publishing, Copyright © 2013 , ISBN 978-1-78216-584-2
3	Arnon Axelrod, Complete Guide to Test Automation, Apress, Copyright © 2018, ISBN-13 (pbk): 978-1-4842-3831-8, ISBN-13 (electronic): 978-1-4842-3832-5
4	Antonio Gomes Rodrigues, Bruno Demion (Milamber), Master Apache JMeter - From Load Testing to DevOps: Master performance testing with JMeter ,PACKT publishing, 1st Edition,2019, ISBN-13:978-1839217647

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QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

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EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Laboratory (CIE): 40 + 10 = 50

Conduction of laboratory exercises, Lab report & observation & analysis (50 Marks), Lab Test (50 Marks), adding up to 100 marks. Final marks will be reduced to 40 & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks.

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The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Scheme of Semester End Examination (SEE) Laboratory for 50 marks :

SEE for practical will be jointly conducted and evaluated by two examiners. The duration of practical examination is 3 hours and is evaluated for 50 marks. The break up for conduction of practical examination is (i) Procedure and Write up : 20% of max marks, (ii) Conducting the practical: 60% of max marks, (iii) Viva Voce: 20% of max marks

Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
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			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER: II					
2D & 3D MODELING (Theory and Practice)					
Course Code	**:**	**22MCA254TL**	**CIE**	**:**	**100 + 50 Marks**
L:T:P	**:**	**4:0:1**	**SEE**	**:**	**100 + 50 Marks**
Total Hours	**:**	**52L+26P**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	10 Hrs
Conventions and Standards: Standard sizes of drawing sheets, Lines, Dimensioning terms and notations, general rule for dimensioning, Scales, conventions for materials, simple geometrical constructions (Regular Polygons), perspective projection, orthographic projection, bill of materials	
Unit–II	**10 Hrs**
Orthographic reading and conversion of views: Conversion of pictorial views into orthographic view, screws and threads, riveted joints and welding joints. **Computer aided modeling and drafting (Solidworks):** Terminology, User Interface, Design Process, Design Method, Sketches, Part modeling, Assembly: Assembly Design Methods, Mates, Drawings: Drawing documents	
UNIT –III	**12 Hrs**
Understanding the interface: Interacting with interface, Editors - Workspaces – Themes, Objects in 3D view editor, Editing objects, Editing tools **Modifiers:** Editing with generate modifiers, Editing with deform modifiers **Editing Techniques**: Examples, The Outliners and collections,3D text, Viewport shading, Scene lighting and cameras Examples, The Outliners and collections,3D text, Viewport shading, Scene lighting and cameras	
UNIT –IV	**10 Hrs**
Materials textures nodes, Textures, Rendering, Animation, Constraints	
UNIT –V	**10 Hrs**
Physics and simulation, Particle system, Armature and character rigging, Installing Add-Ons, Making a movie, Cycles and workbench render	

LABORATORY	
1.	Practice lab- General Interface introduction and playing with shapes
2.	Custom 3D object Creation
3.	Color shading/Texturing the object
4.	Custom logo
5.	Develop Animating logo
6.	Explosive product animation
7.	Record explosive product animation from different angles using "Render Animation"
8.	Terrain for natural forest with camp
9.	Baking rain animation and fire camp animation
10.	Rigging an armature to human character with dancing animation

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the basic concept of 2D and 3D modeling
CO2	Outline the components of models using basic geometric principle
CO3	Apply the constructs to easily modify models and implement design changes
CO4	Analyze the design constraints and the design intent of the model

Reference Books	
1.	N D Bhatt, Engineering drawing, fiftieth edition, Charotar Publishing House, 2011, ISBN 978-80358-17-8
2.	Dassault Systèmes, Introducing Solidworks, Dassault Systèmes S.A. company, 175 Wyman Street, Waltham, Mass. 02451 USA. All Rights Reserved.1995-2014
3.	John M. Blain, The Complete Guide to Blender Graphics Computer Modeling & Animation,7th Edition, 2022, ISBN 9781003226420, A K Peters/CRC Press
4.	Romain Caudron, Pierre-Armand Nicq, Enrico Valenza, Blender 3D: Designing Objects,2016, Packt Publishing Ltd, ISBN 978-1-78712-719-7

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Rubric for CIE & SEE for Integrated Theory courses with Laboratory					
RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
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			9 & 10	Unit 5:Question 9 or 10	20
				Theory Exam Marks	**100**
				Laboratory Exam Marks	**50**
				Total Marks	**150**

SEMESTER:II					
DEVOPS (Theory)					
Course Code	**:**	**22MCA261T**	**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**3:1:0**	**SEE**	**:**	**100 Marks**
Total Hours	**:**	**39L+ 26T**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	**08 Hrs**
Docker Fundamentals: Discovering Docker, the what and why of Docker, Building a Docker application. Understanding Docker - Docker's architecture, The Docker daemon, The Docker client, Docker registries, The Docker Hub	
UNIT–II	**08 Hrs**
Docker and Development: Using Docker as a lightweight virtual machine - From VM to container, Saving and restoring your work, Environments as processes, Building images, Running containers	
UNIT–III	**08 Hrs**
Docker and DevOps: Continuous integration - Docker Hub automated builds, Containerizing your CI process. Continuous delivery - Interacting with other teams in the CD pipeline	
UNIT–IV	**07 Hrs**
First steps with Docker and Kubernetes: Creating, running, and sharing a container image, Setting up a Kubernetes cluster, Running the first app on Kubernetes	
UNIT–V	**08 Hrs**
Pods: Introducing Pods, Creating pods from YAML or JSON descriptors, Organizing pods with labels, Listing subsets of pods through label selectors, Annotating pods, Using namespaces to group resources, Stopping and removing pods	

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand of Docker basics, installation and learn to work with containers
CO2	Use containers and move applications across environments with continuous integration and delivery
CO3	Leverage Docker to perform automated builds and make Kubernetes to work on container images
CO4	Explore the Kubernetes architecture to set up and use entire lifecycle-based clusters and pods

Reference Books	
1.	Ian Miell, Aidan Hobson Sayers, "Docker in Practice", Manning Publications, 2nd Edition, 2019, ISBN–9781617294808
2.	Marko Lukša, "Kubernetes in Action", Manning Publications, 2nd Edition, 2018, ISBN–9781617293726
3.	James Turnbull, "The Docker Book", Turnbull Press, 2nd Edition, 2017, ISBN–9780988820203
4.	Brendan Burns, Joe Beda, and Kelsey Hightower, "Kubernetes: Up and Running", 2nd Edition, 2019, ISBN–978-1-492-04653-0

Scheme of Continuous Internal Evaluation (CIE): 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30), Video based seminar/presentation/demonstration (30) adding up to 60 marks. Final EL marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit...

Rubric for CIE & SEE Theory courses

RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
	Total Marks	**100**	5 & 6	Unit 3:Question 5 or 6	20
			7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Total Marks	**100**

SEMESTER: II					
ADVANCED COMPUTER NETWORKS (Theory)					
Course Code	**:**	**22MCA262T**	**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**3:1:0**	**SEE**	**:**	**100 Marks**
Total Hours	**:**	**39L+ 26T**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	**08 Hrs**
Introduction to Internet Protocol and Classless and Subnet Address Extension (CIDR) **Wireless LANS and PANS** : Fundamentals of WLAN's, 802.11 Standards, HIPERLAN Standard, Bluetooth specifications, Transport Protocol group, ZigBee Specification Wireless WANS and MANS – The Cellular Concept and Cellular Architecture- Capacity enhancement .Channel Allocation Algorithms	
UNIT–II	**08 Hrs**
Mobile IP : Introduction, Mobility, Routing and Addressing, Mobile IP Characteristics, Overview of Mobile IP Operations, Mobile Addressing Details, Foreign Agent Discovery, Agent Registration, registration message format, communication with a foreign agent, datagram transmission and reception, two- crossing problem, communication with computers on the home network Private	
UNIT–III	**07 Hrs**
Parallel and Distributed Systems: Level of Parallel Computing, challenges in handling concurrency, Distributed Systems, characteristics, properties, design goals, Types of distributed systems. **Virtualization:** Introduction, Hardware virtualization, Hypervisors, Network function virtualization, **Implementation:** Installing the virtualization packages, Creating virtual machines, Network configuration	
UNIT–IV	**08 Hrs**
SDN: Introduction, Centralized and Distributed Control and Data Planes- Introduction, Control plane, Data plane, Moving Information Between Planes, Distributed Control Planes, IP and MPLS, Convergence Time, Load Balancing, High Availability	
UNIT–V	**08 Hrs**
Cloud computing: Introduction, Characteristics of Cloud Computing, Cloud Models, Cloud Service Examples, Load Balancing, Scalability & Elasticity, Deployment, Replication, Monitoring, **Cloud Application Design:** Design characteristics for cloud application, Reference architecture for cloud application, Cloud application design methodologies	

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the advanced networking concepts
CO2	Identify the various advances in networking
CO3	Analyse the advances in networking for cloud computing
CO4	Apply advanced networking concepts in cloud

Reference Books	
1.	C. Siva Ram Murthy, B. S. Manoj, Ad Hoc Wireless Networks Architecture and Protocols, Pearson Publication, 2011, ISBN 978–81-317-5905-9
2.	Douglas E Comer, Internetworking with TCP/IP, Pearson Education India, 6th Edition, 2015, ISBN: 978-9332550100
3.	Maarten van Steen and Andrew S.Tanenbaum, Distributed systems, Pearson Education, 3rd Edition, 2017, ISBN: 978-90-815406-2-9
4.	Arshadeep Bahga, Vijay Madisetti, Cloud Computing A Hands-On Approach, University Press, 2014, ISBN: 9788173719233

Scheme of Continuous Internal Evaluation (CIE): 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30 marks), Video based seminar/presentation/demonstration (30 marks) adding upto 60 marks. Final EL marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Rubric for CIE & SEE Theory courses

RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & El2	30	3 & 4	Unit 2:Question 3 or 4	20
	Total Marks	**100**	5 & 6	Unit 3:Question 5 or 6	20
			7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Total Marks	**100**

SEMESTER:II					
CRYPTOGRAPHY AND NETWORK SECURITY (Theory)					
Course Code	**:**	**22MCA263T**	**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**3:1:0**	**SEE**	**:**	**100 Marks**
Total Hours	**:**	**39L+ 26T**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	08 Hrs
Introduction: Computer Security Concepts, OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms, A Model for Network Security. Case study **Classic Encryption Technique-** Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography.	
UNIT–II	**07 Hrs**
Block Ciphers and the Data Encryption Standard: Traditional Block Cipher Structure, The Data Encryption Standard, A DES Example, The Strength of DES, Block Cipher Design Principles **Tools:** NMAP, Wire shark	
UNIT–III	**08 Hrs**
Advanced Encryption Standard: Finite Field Arithmetic, AES Structure, AES Transformation Functions. **Public-Key Cryptography and RSA:** Principles of Public-Key Cryptosystems, The RSA Algorithm, Diffie-Hellman Key Exchange, Message Authentication **Tools:** OWASP	
UNIT–IV	**08 Hrs**
Cryptographic Hash Functions: Applications, Two Simple hash Functions, Requirements and Security. Digital Signatures, Elliptic Curve Digital Signatures Algorithm. **Network Security:** Email, PGP, S/MIME, SSL architecture, handshake protocol, change cipher spec protocol.	
UNIT–V	**08 Hrs**
Network Security: Transport layer security. IPSecurity, security policy, Internet key exchange Wireless Security, Mobile Device security **Contemporary Issues and Trends** : Case Study	

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand the basics of Cryptography and Network Security standards.
CO2	Understand public-key cryptography, RSA and other public-key cryptosystems
CO3	Analyse and design algorithms and digital signatures
CO4	Build for the key management, distribution schemes and design

Reference Books	
1.	William Stallings, "Cryptography and Network Security-Principles and Practice" Pearson, 7th Global Edition, 2017, ISBN 13: 978-1-292-15858-7.
2.	Behrouz A. Forouzan "Introduction to Cryptography and Network Security", McGraw-Hill Forouzan Networking Series, 2008, ISBN 978–0–07–287022–0
3.	Man Young Rhee, "Internet Security: Cryptographic Principles", "Algorithms and Protocols", Wiley Publications, 2003, ISBN 0-470-85285-2 2.
4.	Charlie Kaufman and Radia Perlman, Mike Speciner, "Network Security, 2nd Edition, Private Communication in Public World", PHI, 2002, ISBN-13: 978-0130460196

Scheme of Continuous Internal Evaluation (CIE): 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 50 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30 marks), Video based seminar/presentation/demonstration (30 marks) adding upto 60 marks. Final EL marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Rubric for CIE & SEE Theory courses

RUBRIC for CIE			***RUBRIC for SEE***		
SL.NO	**Contents**	**Marks**	**Q.NO**	**Contents**	**Marks**
1	QUIZZES – Q1 & Q2	20	Every unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit [unit 1 to 5]		
2	TESTS – T1 & T2	50	1 & 2	Unit 1:Question 1 or 2	20
3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
	Total Marks	**100**	5 & 6	Unit 3:Question 5 or 6	20
			7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Total Marks	**100**

SEMESTER:II					
DIGITAL MARKETING (Theory)					
Course Code	**:**	**22MCA264T**	**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**3:1:0**	**SEE**	**:**	**100 Marks**
Total Hours	**:**	**39L+ 26T**	**SEE Duration**	**:**	**3.00 Hours**

UNIT–I	07 Hrs
Introduction to Digital Marketing: Evolution of Digital Marketing from traditional to modern era, Role of Internet; Current trends, Info graphics, implications for business & society; Emergence of digital marketing as a tool; Drivers of the new marketing environment; Digital marketing strategy; Paid, Owned, Earned Media framework, Digital landscape, Digital marketing plan, Digital marketing models. Careers in Digital Marketing, Case studies	
UNIT–II	**07 Hrs**
Internet Marketing and Digital Marketing Mix: Internet Marketing, opportunities, and challenges; Digital marketing framework; Digital Marketing mix, Impact of digital channels on IMC; **Search Engine Advertising**- Pay for Search Advertisements, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation Display marketing- Types of Display Ads - Buying Models - Programmable Digital Marketing - Analytical Tools - YouTube marketing. Case studies	
UNIT–III	**10 Hrs**
Social Media Marketing: Role of Influencer Marketing, Tools & Plan– Introduction to social media platforms, penetration & characteristics; Building a successful social media marketing strategy Facebook Marketing: - Business through Facebook Marketing: Creating Advertising Campaigns, Adverts, Facebook Marketing Tools LinkedIn Marketing: Introduction and Importance of LinkedIn Marketing, Framing LinkedIn Strategy, Lead Generation through LinkedIn, Content Strategy, Analytics and Targeting and Mobile Marketing: Mobile Advertising, Forms of Mobile Marketing, Features, Mobile Campaign Development, Mobile Advertising Analytics Introduction to social media metrics. Case studies	
UNIT–IV	**08 Hrs**
Search Engine Optimization (SEO): Web Analytics, Mobile Marketing, Trends in Digital Advertising–Introduction and need for SEO, how to use Internet & search engines; search engine and its working pattern, On-page and off-page optimization, SEO Tactics - SEM Web Analytics - Google Analytics and Google Ad Words; data collection for web analytics, multichannel attribution, Universal analytics, Tracking code Trends in digital advertising. Case studies	
UNIT–V	**07 Hrs**
Social Media Strategy: Introduction, Key terms, and concepts. Using social media to solve business challenges. Step-by-step guide to creating a social media strategy. Documents and processes. Dealing with opportunities and threats. Step-by-step guide for recovering from an online brand attack. Social media risks and challenges. Case studies	

Course Outcomes: After going through this course, the student will be able to	
CO1	Understand Digital marketing theories and practices
CO2	Foster Analytical and critical thinking abilities for decision making
CO3	Build global and economical communication strategies for E-marketing
CO4	Analyse, communicate global, economic aspects of E-marketing

Reference Books	
1.	Seema Gupta "Digital Marketing" Mc-Graw Hill ISBN:978-9355320407 1st Edition, 2022
2.	Nitin C. Kamat, Chinmay Nitin Kamat," Digital Social Media Marketing", Himalaya Publishing House Pvt. Ltd. Latest Edition
3.	Ian Dodson, "The Art of Digital Marketing" Wiley Latest Edition
4.	Damian Rayan, "Marketing Strategies for Engaging the Digital Generation", Brilliance Audio 4th Edition,2016978-0749453893.

Scheme of Continuous Internal Evaluation (CIE): 20 + 50 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

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EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (30 marks), Video based seminar/presentation/demonstration (30 marks) adding upto 60 marks. Final EL marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks:

The question paper will have FIVE full questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Rubric for CIE & SEE Theory courses

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3	Experiential Learning – EL1 & EL2	30	3 & 4	Unit 2:Question 3 or 4	20
	Total Marks	**100**	5 & 6	Unit 3:Question 5 or 6	20
			7 & 8	Unit 4:Question 7 or 8	20
			9 & 10	Unit 5:Question 9 or 10	20
				Total Marks	**100**

SEMESTER: II					
DESIGN THINKING (Practice)					
Course Code	**:**	**22MCA27L**	**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:2**	**SEE**	**:**	**50 Marks**
Total Hours	**:**	**52P(26 contact hrs+ 26 Non-contact hrs)**	**SEE Duration**	**:**	**3.00 Hours**

STAGE–I
Empathy: The Empathy phases of the process are focused on understanding the experiences, emotions and motivations of others. Designers use specific empathy methods to learn more about the needs of the users for whom they are designing. **Methods:** Interviewing Probes and Observations.
STAGE–II
Define: The Define phase of the process is focused on developing a point of view about the need of your user. During this stage of process, designers narrow from lots of information to a statement that is inspiring and specific **Methods:** Empathy Mapping, Point of View.
STAGE–III
Ideate: The Ideate phase of the process is focused on generating as many solutions to a problem as possible. Once many solutions have been generated, students will select one to move forward to prototyping **Methods :** Brainstorming and Selection
STAGE–IV
Prototype: The Prototype phase is where designers construct representation of their solutions. These representations are intended to elicit feedback and answer specific questions about a concept. **Methods :** Improve, Rapid and Experiential Prototyping
STAGE–V
Test: The Test phase of the process is focused on getting specific feedback about how ideas can improve. It is important to remember during this phase that prototypes are imperfect but feedback is gift. **Methods:** Testing

Course Outcomes: After going through this course, the student will be able to	
CO1	Learn to use different modes of thinking to understand the problem instead of finding answers/solutions for questions/problems
CO2	Acquire adductive reasoning to find new problems
CO3	Sow the seed of creativity to look for innovative solutions for a problem
CO4	Adopt human centric approaches while developing new solutions, products or services.

Guidelines for Design Thinking Lab:	
1.	The Design Thinking Lab (DTL) is to be carried out by a team of two-three students.
2.	Each student in a team must contribute equally in the tasks mentioned below
3.	Each group has to select a theme that will provide solutions to the challenges of societal concern. The topics should be in line with the Sustainable Development Goals (SDG)
4.	The above five stages specified will be evaluated in three phases
5.	For every Phase of evaluation, the committee constituted by the department along with the coordinators would evaluate for CIE. The committee shall consist of respective coordinator & two senior faculty members as examiners. The evaluation will be done for each student separately.
6.	The team should prepare a Digital Poster and a report should be submitted after incorporation of any modifications suggested by the evaluation committee.

Scheme of Continuous Internal Examination (CIE)

Evaluation of the work will be done by the committee appointed by the director, Dept of MCA. The student should submit report on the Case Study.

Evaluation will be carried out in THREE Phases.

Phase	Activity	Marks
I	Phase I	10
II	Phase II	15
III	Phase III	25

Scheme for Semester End Examination (SEE)

The evaluation will be done by Internal and External examiners. The following weightage would be given for the examination.

1	Written presentation of synopsis: Write up	05 Marks
2	Presentation / Demonstration of the project Idea / Solution	15 Marks
3	Demonstration of the Prototype	20 Marks
4	Viva- Voce	05 Marks
5	Report	05 Marks

Curriculum Design Process

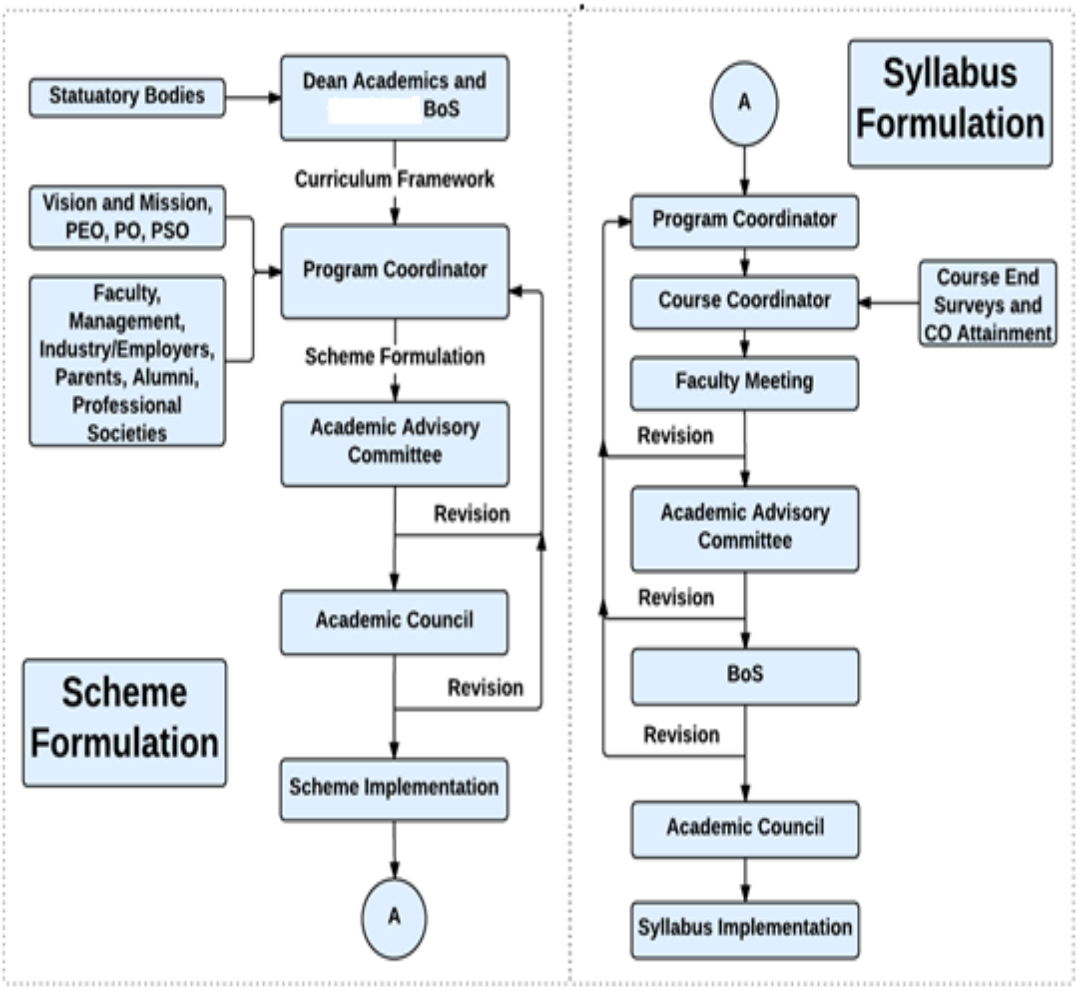

Figure 1: Curriculum Design Process

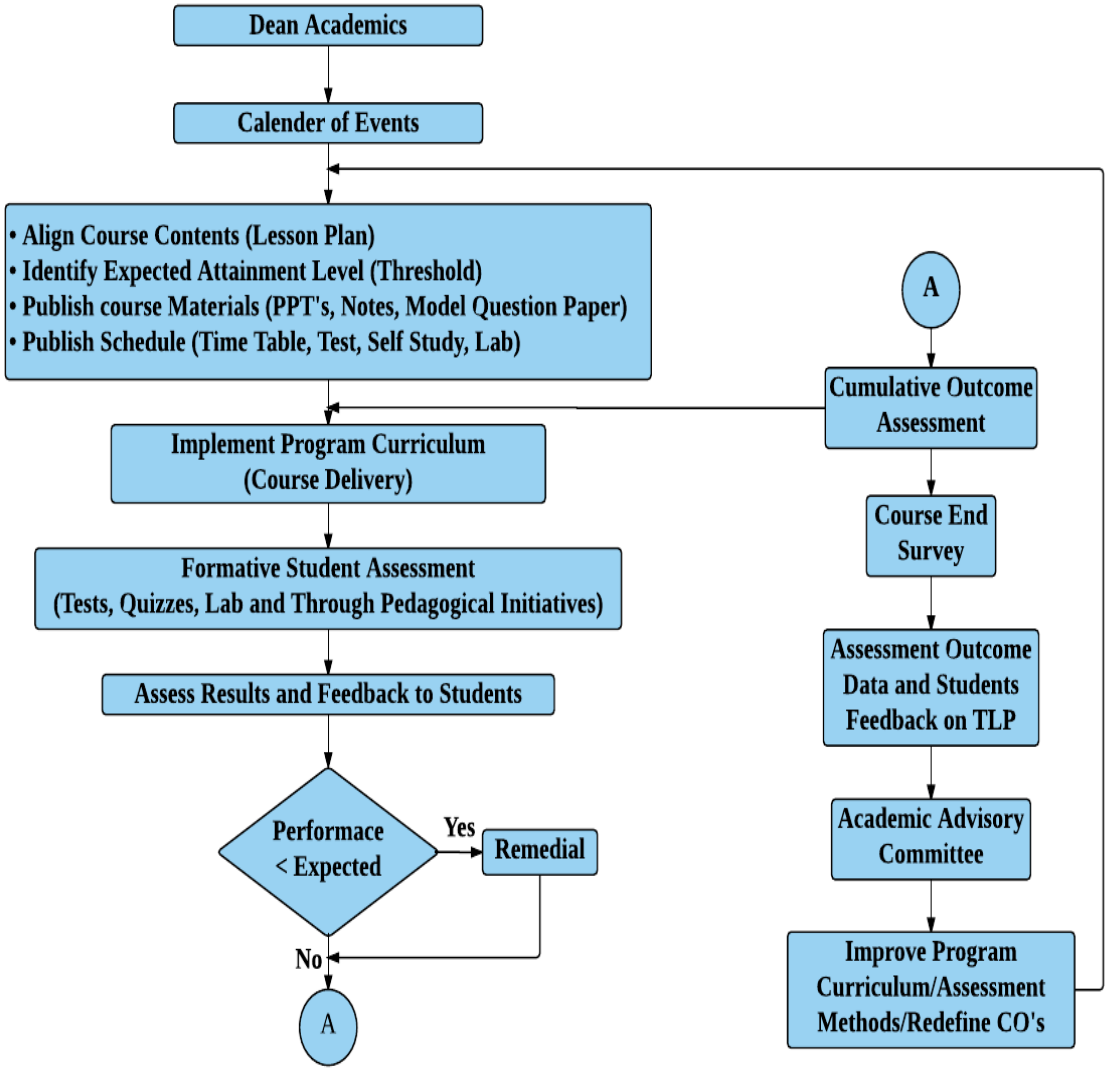

Figure 2: Academic Planning and Implementation

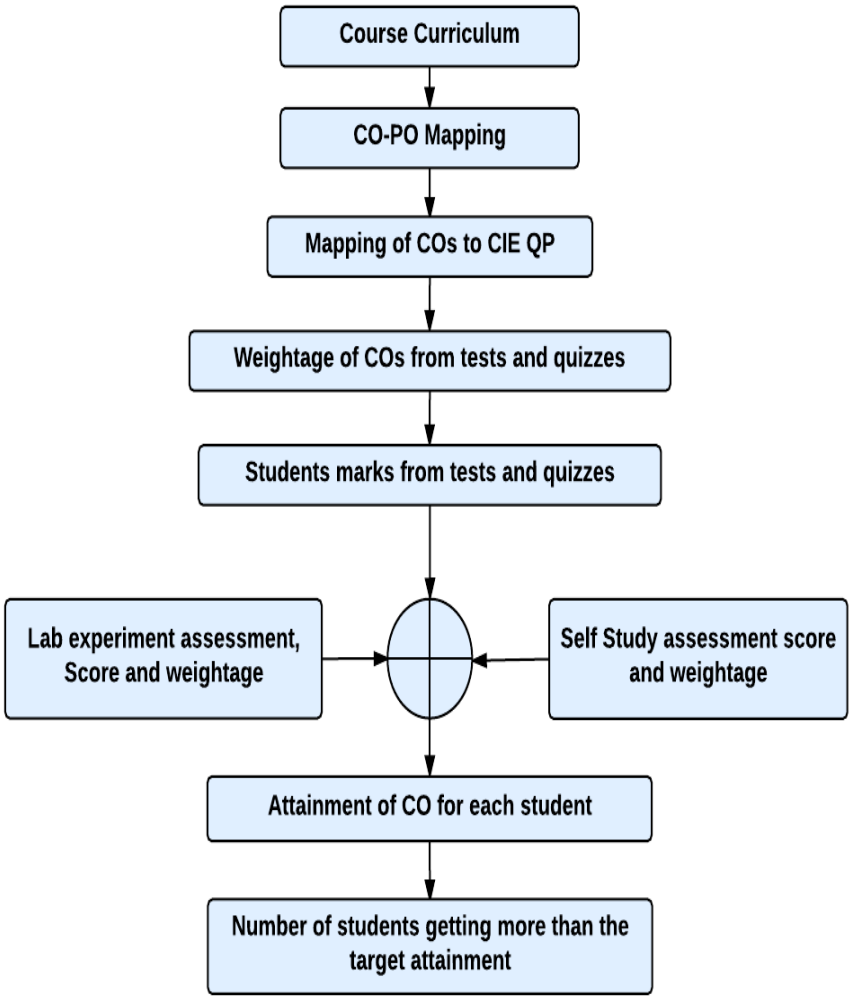

Figure 3: Process for Course Outcome Attainment

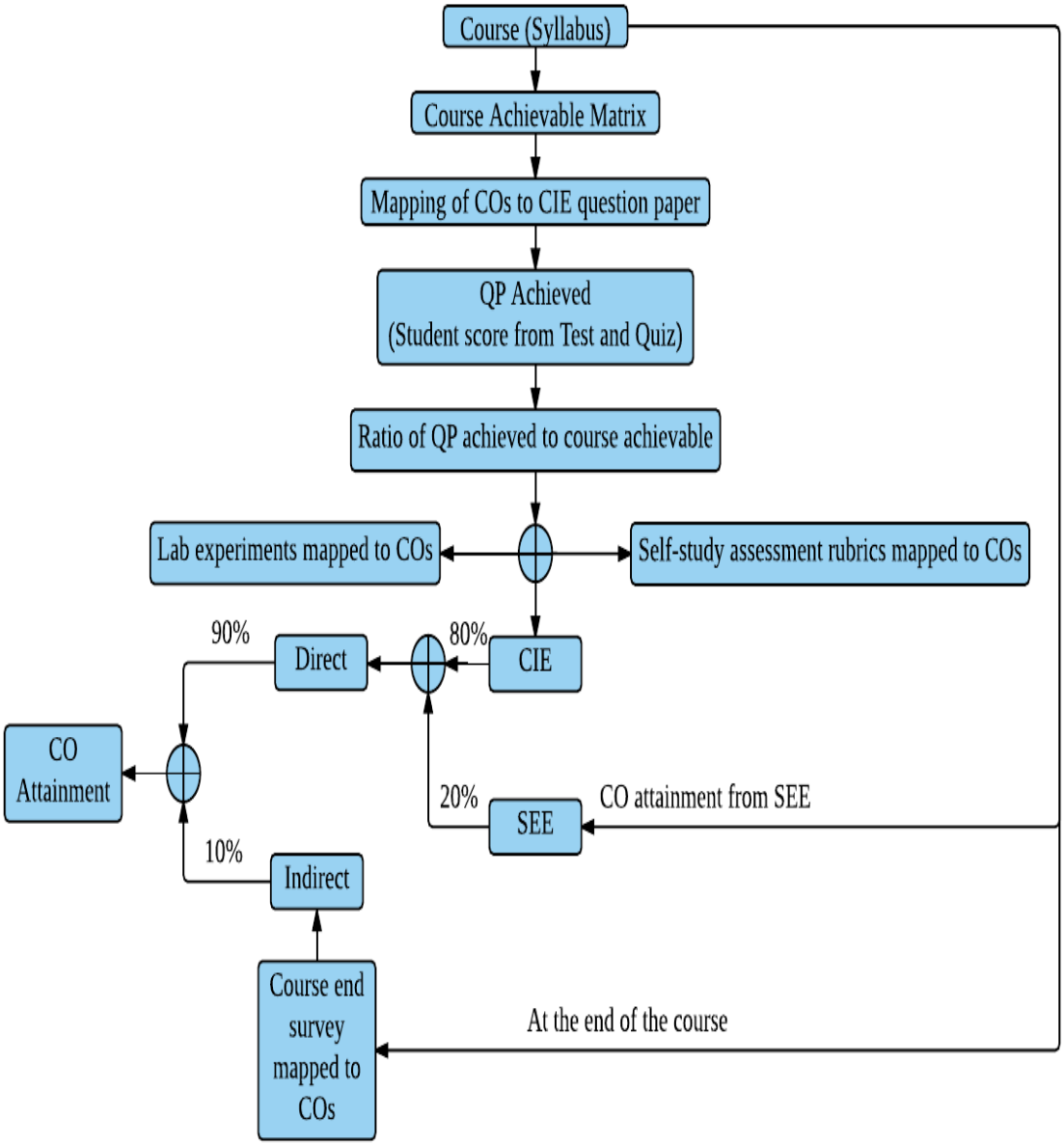

Figure 4: Final CO Attainment Process

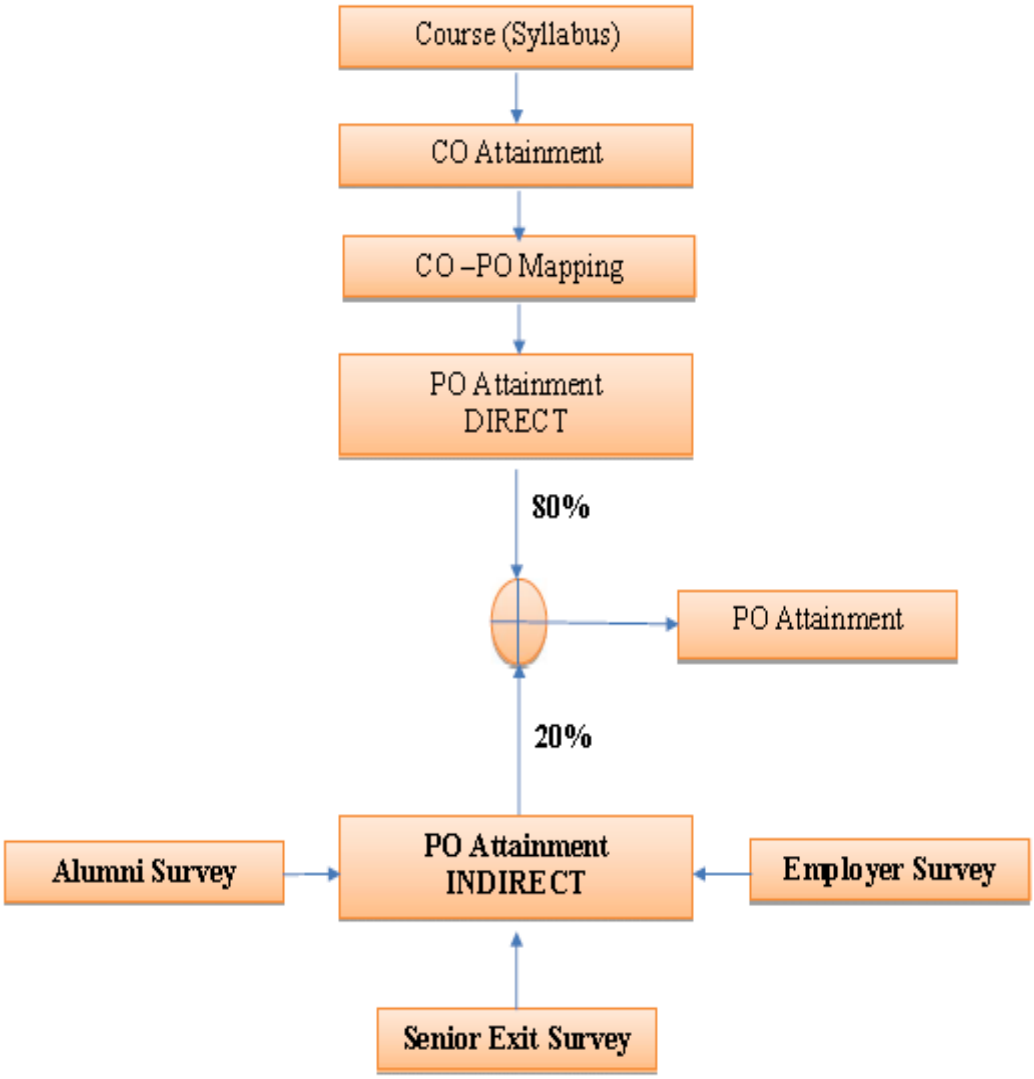

Figure 5: Program Outcome Attainment Process

PROGRAMME OUTCOMES (PO)

MCA Graduates will be able to:

PO1 **Computational Knowledge:** Acquire in-depth computational knowledge and mathematics with an ability to abstract and conceptualize models from defined problems and requirements

PO2 **Problem Analysis:** Identify, formulate, conduct literature survey and solve complex computing problems through analysis as well as provide optimal solutions

PO3 **Design / Development of Solutions:** Design and evaluate solutions for complex problems, components or processes that meet specified needs after considering public health and safety, cultural, societal, and environmental factors

PO4 **Conduct investigations of complex Computing problems:** Conduct literature survey to analyze and extract information relevant to unfamiliar problems and synthesize information to provide valid conclusions and interpret data by applying appropriate research methods, tools and design experiments

PO5 **Use of Modern Tool**: Create, select, adapt and apply appropriate techniques, resources, and modern IT tools to complex computing system activities, with an understanding of the limitations

PO6 **Professional Ethics:** Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices

PO7 **Life-long Learning:** Engage in lifelong learning independently for continual development to improve knowledge and competence as a computing professional

PO8 **Project management and finance:** Demonstrate knowledge and understanding of management principles and apply these to multidisciplinary software development as a team member and manage projects efficiently as a leader considering economical and financial factors

PO9 **Communication Efficacy:** Understand and communicate effectively with the computing community and with society at large, regarding complex computing systems activities confidently and effectively by writing effective reports and design documentations by adhering to appropriate standards, make effective presentations and give / receive clear instructions

PO10 **Societal and Environmental Concern:** Understand responsibilities and consequences based on societal, environmental, health, safety, legal and cultural issues within local and global contexts relevant to professional computing practices

PO11 **Individual and Team Work:** Function effectively as an individual, as a member or leader in diverse teams in multidisciplinary environments

PO12 **Innovation and Entrepreneurship:** Identify a timely opportunity for entrepreneurship and use innovation to pursue and create value addition for the betterment of the individual and society at large

Annexure - C

Gold medallists list			
1	1RV19CV004	ADNAN H KOTAWALA	9.19
2	1RV19ME118	VENKATANARASIMHA G HEGDE	9.57
3	1RV19EE049	SHRUSTI CHANNAL	8.90
4	1RV19EC118	PARNIKA	9.57
5	1RV19IM011	BRINDA SAI	9.39
6	1RV19EI026	JHANHAVI R	9.66
7	1RV19CH003	ADITI PANDEY	9.50
8	1RV19CS117	PRANEETA IMMADISETTY	9.87
9	1RV19ET055	SUMUKHA S SRIVATSA	8.96
10	1RV19IS002	AKASH KALMESH HIREMATH	9.56
11	1RV19BT056	VIBHA R	9.65
12	1RV19AS032	NIHAL HEBBAR	9.18

RV COLLEGE OF ENGINEERING
RANK LIST

CIVIL ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19CV004	ADNAN H KOTAWALA	9.19	1ST
2	1RV19CV115	THEERTHA SWAROOP M	9.05	2ND
3	1RV19CV102	SRISHTI	8.94	3RD
4	1RV19CV048	MAHANTHESH S	8.71	4TH
5	1RV20CV410	VINAYAK SULGEKAR	8.63	5TH
6	1RV19CV025	DHEERAJ R	8.60	6TH
7	1RV20CV403	N SUNDEEP	8.51	7TH
8	1RV19CV075	RAVI RAJ	8.47	8TH
9	1RV19CV055	NITHEESH E	8.43	9TH
10	1RV19CV020	AVINASHKUMAR K	8.41	10TH

MECHANICAL ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19ME118	VENKATANARASIMHA G HEGDE	9.57	1ST
2	1RV19ME064	MALIK KALANDAR MULLA	9.34	2ND
3	1RV19ME087	RITHWIK SHANKAR RAJ	9.33	3RD
4	1RV19ME005	ABHISHEK SHETTY	9.22	4TH
5	1RV19ME080	PRATIK SEETHARAM	9.21	5TH
6	1RV19ME028	AYAN ATAL	9.15	6TH
7	1RV19ME002	ABHISHEK ALVA	8.94	7TH
8	1RV19ME048	GURUGANESH MADDODI	8.91	8TH
9	1RV19ME095	SAMPREET DINAKAR NAYAK	8.89	9TH
10	1RV19ME053	HRISHIKESH DAS	8.82	10TH

ELECTRICAL & ELECTRONICS ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19EE049	SHRUSTI CHANNAL	8.90	1ST
2	1RV19EE037	ROHIT ANAND TAMBEKAR	8.73	2ND
3	1RV19EE001	ADITYA SINGH	8.61	3RD
4	1RV19EE059	VARSHINI TOLPADI	8.57	4TH
5	1RV19EE066	ASHRITHA K	8.53	5TH
6	1RV19EE021	KAVERI BANDIGANI	8.49	6TH

ELECTRONICS & COMMUNICATION ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19EC118	PARNIKA	9.57	1ST
2	1RV19EC079	KEERTHANA RAMESH	9.56	2ND
3	1RV19EC038	BHARATH M	9.55	3RD
4	1RV19EC117	PALLAVI P	9.50	4TH
5	1RV19EC197	SAKSHAM SHARMA	9.44	5TH
6	1RV19EC112	P KARTIK	9.39	6TH
7	1RV19EC036	AYUSHI WADJIKAR	9.34	7TH
8	1RV19EC009	ADITHYA M K	9.32	8TH
9	1RV19EC049	DHANUSH B SRIRAM	9.30	9TH
10	1RV19EC029	ARJUN M	9.30	10TH

INDUSTRIAL ENGINEERING & MANAGEMENT

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19IM011	BRINDA SAI	9.39	1ST
2	1RV19IM023	HIRANMAYI NIRANJAN	9.22	2ND
3	1RV19IM059	UHA KRISHNAN V	8.91	3RD
4	1RV19IM022	HARSHITHA M	8.88	4TH
5	1RV19IM051	SHACHIKA THANIGAIVELU	8.78	5TH
6	1RV19IM026	KARTIK ANSHUMAN VYAKARANAM	8.66	6TH

ELECTRONICS & INSTRUMENTATION ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19EI026	JHANHAVI R	9.66	1ST
2	1RV19EI054	SOUJANYA V BHAT	9.56	2ND
3	1RV19EI001	A VISHNU CHARAN	9.34	3RD
4	1RV19EI061	VAISHNAVI SOLAPUR	9.18	4TH
5	1RV19EI049	SAURAV AGRAWAL	9.14	5TH
6	1RV19EI030	NEHA JAGANNATH	8.93	6TH

CHEMICAL ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19CH003	ADITI PANDEY	9.50	1ST
2	1RV19CH021	NIDHI BHAT	9.39	2ND
3	1RV19CH029	YASHESH VIJAY RAJYAGURU	9.34	3RD
4	1RV19CH031	SELA ROSHNI SHRI	9.08	4TH

COMPUTER SCIENCE & ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19CS117	PRANEETA IMMADISETTY	9.87	1ST
2	1RV19CS193	ADITYA Y JEPPU	9.83	2ND
3	1RV19CS011	AKSHAY MAMMEN KOSHY	9.78	3RD
4	1RV19CS165	SUJALA REDDY R S	9.78	4TH
5	1RV19CS097	NAMYA L G	9.64	5TH
7	1RV19CS023	ARYAN AGARWAL	9.59	6TH
8	1RV19CS084	MANALI M RANADE	9.57	7TH
9	1RV19CS100	NIDHI G K	9.56	8TH
10	1RV19CS123	R SHARATH CHANDRA	9.50	9TH
11	1RV19CS196	APARNA KINI	9.49	10TH

ELECTRONICS & TELECOMMUNICATION ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19ET055	SUMUKHA S SRIVATSA	8.96	1ST
2	1RV19ET001	A M ANJANA SUNDARI	8.89	2ND
3	1RV19ET022	DHEERAJ V C	8.87	3RD
4	1RV19ET050	SAMUDYATA A	8.82	4TH
5	1RV19ET056	SURBHI CHOUDHARY	8.54	5TH
6	1RV19ET065	S BHUVANA	8.54	6TH

INFORMATION SCIENCE & ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19IS002	AKASH KALMESH HIREMATH	9.56	1ST
2	1RV19IS031	NIDHI H HALAPPANAVAR	9.55	2ND
3	1RV19IS037	PRINSON FERNANDES	9.54	3RD
4	1RV19IS003	AKASH SHETTY	9.49	4TH
5	1RV19IS049	SHIVAM PRAJAPATI	9.49	5TH
6	1RV19IS023	KETAN VAISH	9.33	6TH

BIOTECHNOLOGY

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19BT056	VIBHA R	9.65	1ST
2	1RV19BT008	BHUVANA PRAKASH	9.38	2ND
3	1RV19BT007	ASHLY BINOY	9.27	3RD
4	1RV19BT024	MANOGNA S	9.11	4TH
5	1RV19BT020	JOANNA NICOLE D'SOUZA	9.11	5TH
6	1RV19BT041	SHRAVANI S DAPTARDAR	9.07	6TH

AEROSPACE ENGINEERING

Sl.No	SIN/USN	NAME	CGPA	RANK
1	1RV19AS032	NIHAL HEBBAR	9.18	1ST
2	1RV19AS040	PRAVEEN PRASAD HANDIGOL	9.15	2ND
3	1RV19AS015	CHINMAY S KUNDAPUR	9.01	3RD

4	1RV19AS037	P V PRANAV	8.98	4TH
5	1RV19AS048	SHRYAS BHURAT	8.93	5TH
6	1RV19AS022	KRISHNA DEV RATHI	8.90	6TH

Best outgoing student

1	1RV19CS117	PRANEETA IMMADISETTY	9.87	

Graduate List (2022-23)				
Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV19AS001	A VISHNU PRIYA	8.44	First Class with Distinction
2	1RV19AS002	AASHISH YADAV	8.62	First Class with Distinction
3	1RV19AS003	AKASH G M	7.17	First Class
4	1RV19AS004	AMRUTH N RAJ	8.07	First Class with Distinction
5	1RV19AS006	ANEESH R PHATAK	8.39	First Class with Distinction
6	1RV19AS007	ANSHUL JAIN	8.46	First Class with Distinction
7	1RV19AS008	ARYAN VASHISTHA	7.66	First Class
8	1RV19AS009	ASHISH RAJEEV NAYAK	8.65	First Class with Distinction
9	1RV19AS010	AVINASH RAVI RATHOD	7.70	First Class
10	1RV19AS011	B C LIKHITH MAADHAV	8.83	First Class with Distinction
11	1RV19AS012	C H BHUVANESHWARI	7.13	First Class
12	1RV19AS013	CALIX LEONEL C	7.19	First Class
13	1RV19AS015	CHINMAY S KUNDAPUR	9.01	First Class with Distinction
14	1RV19AS016	DARSHAN A RAICHUR	8.60	First Class with Distinction
15	1RV19AS017	GAUTHAM MAYUR N	8.83	First Class with Distinction
16	1RV19AS018	HARISH KUMAR	7.11	First Class
17	1RV19AS019	HARSHITH MAHESH CHIKKAMATH	7.94	First Class with Distinction
18	1RV19AS020	JASPREET KAUR	7.47	First Class
19	1RV19AS021	JAYASHALI L V	7.58	First Class
20	1RV19AS022	KRISHNA DEV RATHI	8.90	First Class with Distinction
21	1RV19AS023	KRUTHIKA RAMJI	7.60	First Class
22	1RV19AS024	KSHEERAJ KRISHNA K V	7.51	First Class
23	1RV19AS026	MAYUR V	8.41	First Class with Distinction
24	1RV19AS027	MOHAMMED ARSH YAMKANMARDI	7.97	First Class with Distinction

25	1RV19AS028	N SAGAR	8.47	First Class with Distinction
26	1RV19AS029	NAIJITH RAI	8.59	First Class with Distinction
27	1RV19AS030	NAMAN KUMAR SHETTY	8.64	First Class with Distinction
28	1RV19AS031	NAMAN MANOJ LADHAD	8.83	First Class with Distinction
29	1RV19AS032	NIHAL HEBBAR	9.18	First Class with Distinction
30	1RV19AS033	NIKHIL H B	8.02	First Class with Distinction
31	1RV19AS034	NINAD GAJANAN	8.17	First Class with Distinction
32	1RV19AS035	NIRANJAN S PATTANSHETTI	8.85	First Class with Distinction
33	1RV19AS036	NITHYAASHREE G	8.76	First Class with Distinction
34	1RV19AS037	P V PRANAV	8.98	First Class with Distinction
35	1RV19AS038	PRAJWAL B S	8.77	First Class with Distinction
36	1RV19AS039	PRASHANT S SATTARAGI	8.13	First Class with Distinction
37	1RV19AS040	PRAVEEN PRASAD HANDIGOL	9.15	First Class with Distinction
38	1RV19AS041	RITHWIK R	8.89	First Class with Distinction
39	1RV19AS042	RUTURAJ P YELLURKAR	8.20	First Class with Distinction
40	1RV19AS043	SAKSHI B M	7.78	First Class with Distinction
41	1RV19AS045	SAMYATH R RAO	8.78	First Class with Distinction
42	1RV19AS047	SHREYANSH SHARMA	8.86	First Class with Distinction
43	1RV19AS048	SHRYAS BHURAT	8.93	First Class with Distinction
44	1RV19AS049	SHUBHAM DAS	7.70	First Class
45	1RV19AS051	SRIKRISHNA	7.96	First Class with Distinction
46	1RV19AS053	SUKHVINDER SINGH CHEEMA	7.11	First Class
47	1RV19AS054	THIRUMALAPUDI VENKATA NAGA SAI BHAVANA	7.63	First Class
48	1RV19AS055	TUNGA S G	7.61	First Class

49	1RV19AS056	UMESH CHOUDHARY	8.49	First Class with Distinction
50	1RV19AS059	YASH SANJAY REVANKAR	8.47	First Class with Distinction
51	1RV19AS060	YASHASVI B HUGAR	8.41	First Class with Distinction
52	1RV19AS061	YOGESH RAMA MOGER	8.40	First Class with Distinction
53	1RV19AS062	GREESHMA A	8.32	First Class with Distinction
54	1RV19AS063	ADARSH CHANDRA	7.88	First Class with Distinction
55	1RV20AS400	ADVAITH P SHETTY	8.57	First Class with Distinction
56	1RV20AS401	HARSHITH GOWDA V	7.99	First Class with Distinction
57	1RV20AS402	KEERTHI N	7.48	First Class
58	1RV20AS403	SHREYAS J	7.99	First Class with Distinction
59	1RV20AS404	SUSHYANTH GALI	7.56	First Class
60	1RV20AS405	UMER MUHAMMIL	7.99	First Class with Distinction

Graduate List (2022-23)				
Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV19BT001	AAKAANKSHA KAUL	8.83	First Class with Distinction
2	1RV19BT005	ANU ANN JOHN	7.75	First Class with Distinction
3	1RV19BT007	ASHLY BINOY	9.27	First Class with Distinction
4	1RV19BT008	BHUVANA PRAKASH	9.38	First Class with Distinction
5	1RV19BT009	C U SRI SHREYA DEVI	8.54	First Class with Distinction
6	1RV19BT011	CHIRANTH C R	8.82	First Class with Distinction
7	1RV19BT014	DHIVYAPRIYA R	8.57	First Class with Distinction
8	1RV19BT015	DHRITHI BHAT	8.47	First Class with Distinction
9	1RV19BT016	FAHEENA ANJUM N JAHANGIR	8.51	First Class with Distinction

10	1RV19BT018	J SANJANA	8.18	First Class with Distinction
11	1RV19BT019	JAHNAVI G BHAT	8.81	First Class with Distinction
12	1RV19BT020	JOANNA NICOLE D'SOUZA	9.11	First Class with Distinction
13	1RV19BT022	LAUHITYA A	8.74	First Class with Distinction
14	1RV19BT024	MANOGNA S	9.11	First Class with Distinction
15	1RV19BT026	MARYANNE VARGHESE	7.63	First Class
16	1RV19BT027	MEGHANA M S	8.21	First Class with Distinction
17	1RV19BT028	NAMITA RAO B	7.67	First Class
18	1RV19BT031	PRARTHANA S REDDY	8.58	First Class with Distinction
19	1RV19BT032	PRATYUSH DWIVEDI	7.35	First Class
20	1RV19BT034	RISHAB U SUBRAMANYAM	7.77	First Class with Distinction
21	1RV19BT035	SAI DRISHYA S	8.40	First Class with Distinction
22	1RV19BT036	SAMEEKSHA GURURAJA YELLAPUR	8.26	First Class with Distinction
23	1RV19BT037	SANJANA DASGUPTA	7.62	First Class
24	1RV19BT038	SARAH PHILIP	8.69	First Class with Distinction
25	1RV19BT039	SARVESHA BABU M	8.54	First Class with Distinction
26	1RV19BT040	SHAIK SAMEER	7.48	First Class
27	1RV19BT041	SHRAVANI S DAPTARDAR	9.07	First Class with Distinction
28	1RV19BT043	SHREYITHA M	8.52	First Class with Distinction
29	1RV19BT044	SNEHA KUMKUM	7.81	First Class with Distinction
30	1RV19BT045	SNEHA S PATIL	6.99	First Class
31	1RV19BT046	SONAL SAINI	9.06	First Class with Distinction
32	1RV19BT048	SPOORTHI B R	8.86	First Class with Distinction
33	1RV19BT049	SPOORTI SORATUR	8.53	First Class with Distinction
34	1RV19BT051	TANMAY KUMAR	7.13	First Class
35	1RV19BT052	THRIPTHI V S	7.07	First Class
36	1RV19BT053	V RASHMI	7.12	First Class

37	1RV19BT054	VARSHA SINGH M	7.22	First Class
38	1RV19BT056	VIBHA R	9.65	First Class with Distinction
39	1RV19BT057	VRUSHALI PRASHANT DESAI	8.34	First Class with Distinction

Sl.No	USN	NAME	CGPA	CLASS
1	1RV19CH002	ABHISHEK	6.72	Second Class
2	1RV19CH003	ADITI PANDEY	9.50	First Class with Distinction
3	1RV19CH004	ADITI TATA	8.98	First Class with Distinction
4	1RV19CH007	ARKO BOSE	8.57	First Class with Distinction
5	1RV19CH012	CHITRA AGRAWAL	7.92	First Class with Distinction
6	1RV19CH014	HARSH KESHARWANI	7.64	First Class
7	1RV19CH016	IQRA ARABIA ALI KHAN	8.38	First Class with Distinction
8	1RV19CH018	ISHAAN BHAT	8.72	First Class with Distinction
9	1RV19CH019	MANAV NAGAR	7.03	First Class
10	1RV19CH021	NIDHI BHAT	9.39	First Class with Distinction
11	1RV19CH022	NISHA G GUDIGAR	8.55	First Class with Distinction
12	1RV19CH024	OM MADAN RAIKAR	9.05	First Class with Distinction
13	1RV19CH025	PASUPULETI VENKATA SAI DINESH	7.46	First Class
14	1RV19CH027	PULKIT JAIN	8.42	First Class with Distinction
15	1RV19CH029	YASHESH VIJAY RAJYAGURU	9.34	First Class with Distinction
16	1RV19CH030	SAMHITA M KIRAN	7.57	First Class
17	1RV19CH031	SELA ROSHNI SHRI	9.08	First Class with Distinction
18	1RV19CH033	SHRAVAN MANJUNATH	6.66	Second Class
19	1RV19CH034	SHRAVAN S RANGA	8.35	First Class with Distinction
20	1RV19CH035	SUPRATIM MAJUMDER	7.18	First Class

21	1RV19CH036	VARSHITH TIPIRNENI	8.95	First Class with Distinction
22	1RV19CH037	VISHWESH S DESAI	7.22	First Class
23	1RV19CH038	YASEEN MUNEER	7.62	First Class
24	1RV20CH401	JEEVITHA A M	8.39	First Class with Distinction
25	1RV20CH402	VAMSHIKA I	8.05	First Class with Distinction

Sl.No	USN	NAME	CGPA	CLASS
1	1RV18CS147	SHAHBAAZ AHMED	7.21	First Class
2	1RV19CS001	ABDUR RAHAMAN	8.34	First Class with Distinction
3	1RV19CS002	ABHAY H KASHYAP	9.22	First Class with Distinction
4	1RV19CS004	ADARSH RAMAKRISHNA HEGDE	8.89	First Class with Distinction
5	1RV19CS005	ADITHI VISWANATH	7.91	First Class with Distinction
6	1RV19CS006	ADITYA SINGH	8.83	First Class with Distinction
7	1RV19CS008	AKSHAT BANSAL	7.48	First Class
8	1RV19CS009	AKSHAT KHARE	8.46	First Class with Distinction
9	1RV19CS010	AKSHAY KUMAR NALATAWAD	8.22	First Class with Distinction
10	1RV19CS011	AKSHAY MAMMEN KOSHY	9.78	First Class with Distinction
11	1RV19CS012	AKSHAY SHANKAR	8.59	First Class with Distinction
12	1RV19CS013	AKSHITA GUPTA	9.27	First Class with Distinction
13	1RV19CS014	ALLE NAGA RISHIKESH REDDY	9.15	First Class with Distinction
14	1RV19CS016	AMISH CHOPRA	8.02	First Class with Distinction
15	1RV19CS017	ANISH A S	8.97	First Class with Distinction
16	1RV19CS018	ANKIT	7.67	First Class
17	1RV19CS019	ANNAPOORNESWARI H P	8.45	First Class with Distinction
18	1RV19CS020	ANUPAMA SHALAVADI	7.48	First Class

19	1RV19CS021	ANVITHKUMAR A SHETTY	8.94	First Class with Distinction
20	1RV19CS022	ARTHIK BHANDARY	8.99	First Class with Distinction
21	1RV19CS023	ARYAN AGARWAL	9.59	First Class with Distinction
22	1RV19CS024	ARYAN RAJ SINHA	7.49	First Class
23	1RV19CS025	ARYN BARMAN	8.94	First Class with Distinction
24	1RV19CS026	ASHFAQ HUSSAIN SYED	7.62	First Class
25	1RV19CS027	ASHISH BALLATIGI	9.28	First Class with Distinction
26	1RV19CS029	ATHREYA V SHET	8.80	First Class with Distinction
27	1RV19CS031	AYAZ ABDULLA A A	8.18	First Class with Distinction
28	1RV19CS034	AYUSH RAJ SINGH	7.51	First Class
29	1RV19CS035	B ARAVIND	8.75	First Class with Distinction
30	1RV19CS036	B MITHRA VARUN	8.30	First Class with Distinction
31	1RV19CS038	BOGAM VENU	6.93	First Class
32	1RV19CS040	CHARAN M R	8.78	First Class with Distinction
33	1RV19CS041	CHINMAY B S	8.43	First Class with Distinction
34	1RV19CS042	DARSHAN J	9.22	First Class with Distinction
35	1RV19CS043	DEEPANKUR GUPTA	9.17	First Class with Distinction
36	1RV19CS045	DEVATHI N NIKHIL	8.69	First Class with Distinction
37	1RV19CS046	DIVYANG MISHRA	8.28	First Class with Distinction
38	1RV19CS047	EDUPUGANTI AKHIL	7.75	First Class with Distinction
39	1RV19CS048	EMIL SOLOMAN	8.73	First Class with Distinction
40	1RV19CS049	G V KARUNA SAGAR	7.95	First Class with Distinction
41	1RV19CS051	GANDLA MAHIKSHITH	7.33	First Class
42	1RV19CS052	GAURAV PAI B	8.89	First Class with Distinction
43	1RV19CS053	GAURAV YELLURU	9.62	First Class with Distinction
44	1RV19CS054	HARIHAR S PAWAR	7.23	First Class

45	1RV19CS055	HARIKIRAN G	8.37	First Class with Distinction
46	1RV19CS056	HARSH GOYAL	9.08	First Class with Distinction
47	1RV19CS057	HIMA J KAMMACHI	9.23	First Class with Distinction
48	1RV19CS058	HIMANSHU GUPTA	9.27	First Class with Distinction
49	1RV19CS059	HRITESH KACHROO	8.67	First Class with Distinction
50	1RV19CS060	HRITHIK RAINA	8.88	First Class with Distinction
51	1RV19CS061	ISHA V P	9.25	First Class with Distinction
52	1RV19CS062	JAGADEESH PATIL	8.26	First Class with Distinction
53	1RV19CS064	JAIKISHAN JAIKUMAR	8.74	First Class with Distinction
54	1RV19CS065	JERIL SABAN JOY	8.75	First Class with Distinction
55	1RV19CS066	JINKA RAKESH	8.93	First Class with Distinction
56	1RV19CS067	ANIRUDH J M	8.10	First Class with Distinction
57	1RV19CS068	K N PRASANNA	9.08	First Class with Distinction
58	1RV19CS069	KARTHIK BHARADWAJ	8.04	First Class with Distinction
59	1RV19CS070	KEERTHAN KUMAR A	9.23	First Class with Distinction
60	1RV19CS071	KHETAN RISHABH PURUSHOTAM	7.16	First Class
61	1RV19CS072	KHUSHI ARORA	7.53	First Class
62	1RV19CS073	KONDE SASIDHAR REDDY	8.60	First Class with Distinction
63	1RV19CS074	KONTISETTY LIKITHA	8.35	First Class with Distinction
64	1RV19CS075	KOUSHIK B N	7.05	First Class
65	1RV19CS076	KRITHIKA VENKATESH	7.95	First Class with Distinction
66	1RV19CS078	KUMAR PRAKHAR	6.55	Second Class
67	1RV19CS079	LOVEY VISHNANI	8.52	First Class with Distinction
68	1RV19CS080	MAHARUDRA	6.86	First Class
69	1RV19CS081	MAHENDRA	7.45	First Class
70	1RV19CS082	MAHESH BHASKAR HEGDE	9.03	First Class with Distinction

71	1RV19CS084	MANALI M RANADE	9.57	First Class with Distinction
72	1RV19CS086	MANISH P S M	8.11	First Class with Distinction
73	1RV19CS087	MAYANK AGARWAL	9.27	First Class with Distinction
74	1RV19CS088	MEHUL GILOTRA	8.55	First Class with Distinction
75	1RV19CS090	MOHAMMED RAFIQ B I	7.40	First Class
76	1RV19CS091	MOHAMMED ZAID SIKANDER	7.80	First Class with Distinction
77	1RV19CS092	MUDIT NAWALGARIA	9.24	First Class with Distinction
78	1RV19CS093	MUSKAN AGRAWAL	8.32	First Class with Distinction
79	1RV19CS094	MYTHRI NAIK	7.73	First Class
80	1RV19CS095	N K SHARATHCHANDRA	8.14	First Class with Distinction
81	1RV19CS096	NAMAN ARYA	8.69	First Class with Distinction
82	1RV19CS097	NAMYA L G	9.64	First Class with Distinction
83	1RV19CS098	NAVNITH BHARADWAJ	7.90	First Class with Distinction
84	1RV19CS099	NEETANSHU TYAGI	7.52	First Class
85	1RV19CS100	NIDHI G K	9.56	First Class with Distinction
86	1RV19CS101	NIKHIL VISHWANATH HEGDE	9.18	First Class with Distinction
87	1RV19CS102	NIKIRAM C	8.39	First Class with Distinction
88	1RV19CS103	NISHCHAL D V	8.79	First Class with Distinction
89	1RV19CS104	NISHIL RAJAN	7.67	First Class
90	1RV19CS105	NITEESH HEGDE	9.08	First Class with Distinction
91	1RV19CS106	NITESH KUMAR TIWARI	7.98	First Class with Distinction
92	1RV19CS107	NITIN KUMAR RAJESH	8.07	First Class with Distinction
93	1RV19CS109	OMPRAKASH	7.79	First Class with Distinction
94	1RV19CS110	P V KOUNDINYA	7.92	First Class with Distinction
95	1RV19CS111	PERLA LEELA CHARAN	9.18	First Class with Distinction

96	1RV19CS112	PHALAKSHA C G	9.08	First Class with Distinction
97	1RV19CS113	POOJA RAJESH	9.26	First Class with Distinction
98	1RV19CS114	PRADEEP T M	7.62	First Class
99	1RV19CS115	PRAJWAL VIJAY KAMBLE	7.75	First Class with Distinction
100	1RV19CS116	PRANAV HARIHARAN	8.17	First Class with Distinction
101	1RV19CS117	PRANEETA IMMADISETTY	9.87	First Class with Distinction
102	1RV19CS118	PRANEETH	8.93	First Class with Distinction
103	1RV19CS119	PRIYA NAYAK	9.47	First Class with Distinction
104	1RV19CS121	PRIYANSHU SINGH	6.99	First Class
105	1RV19CS123	R SHARATH CHANDRA	9.50	First Class with Distinction
106	1RV19CS124	RACHIT DWIVEDI	7.82	First Class with Distinction
107	1RV19CS125	RAGHUNANDAN VENUGOPAL	8.11	First Class with Distinction
108	1RV19CS126	RAGVI GUPTA	8.43	First Class with Distinction
109	1RV19CS127	REVANTH K	7.61	First Class
110	1RV19CS129	ROHAN MAHESHWARI	8.55	First Class with Distinction
111	1RV19CS131	ROHITH SUNILKUMAR NAIR	8.85	First Class with Distinction
112	1RV19CS132	S GOKUL RAJ	8.75	First Class with Distinction
113	1RV19CS133	SAAHIL SHAILENDRA MEHTA	7.71	First Class
114	1RV19CS136	SANGA BHAVESH NIVAS ROYAL	8.62	First Class with Distinction
115	1RV19CS137	SANJANA N	9.38	First Class with Distinction
116	1RV19CS138	SANSKRITI BAJPAI	7.89	First Class with Distinction
117	1RV19CS139	SANTOSH	8.61	First Class with Distinction
118	1RV19CS140	SARTHAK SHARAN	8.09	First Class with Distinction
119	1RV19CS141	SATVIK PATIL	9.43	First Class with Distinction
120	1RV19CS142	SETTIPALLE SAHITHI	8.70	First Class with Distinction

121	1RV19CS143	SHADAKSHARI ARUTAGI	7.82	First Class with Distinction
122	1RV19CS144	SHARAN R SHETTY	8.29	First Class with Distinction
123	1RV19CS145	SHARAYU B BADIGER	8.82	First Class with Distinction
124	1RV19CS146	SHASHANK PASUMARTHY	7.66	First Class
125	1RV19CS147	SHASHWAT SAHU	6.94	First Class
126	1RV19CS148	SHEDBALKAR KRISHNA MARUTI	8.61	First Class with Distinction
127	1RV19CS149	SHIVASHANKAR K	8.15	First Class with Distinction
128	1RV19CS150	SHIVANEETHA G	9.17	First Class with Distinction
129	1RV19CS151	SHRAVASTI SARKAR	9.12	First Class with Distinction
130	1RV19CS152	SHRAVYA DASU	8.79	First Class with Distinction
131	1RV19CS153	SHREYAS P	8.50	First Class with Distinction
132	1RV19CS154	SHREYASHEE DE	7.63	First Class
133	1RV19CS155	SHRIVATSA KULKARNI	9.10	First Class with Distinction
134	1RV19CS156	SHRUJAN R	8.77	First Class with Distinction
135	1RV19CS157	SHUBBHUM YADAV	8.58	First Class with Distinction
136	1RV19CS158	SINCHANA RAJ	8.42	First Class with Distinction
137	1RV19CS159	SNEHA A BIRADAR	8.23	First Class with Distinction
138	1RV19CS160	SNEHA B	6.79	First Class
139	1RV19CS161	SOURABH MALLAPPA KAMATE	9.07	First Class with Distinction
140	1RV19CS162	SOURAV KANNANTHA B	8.68	First Class with Distinction
141	1RV19CS163	SRIKANTHA M L	9.40	First Class with Distinction
142	1RV19CS164	SUDHANSHU GARG	8.99	First Class with Distinction
143	1RV19CS165	SUJALA REDDY R S	9.78	First Class with Distinction
144	1RV19CS166	SUMANTH HEGDE	9.33	First Class with Distinction
145	1RV19CS167	SUMIT RAMESH KAKATI	9.06	First Class with Distinction

146	1RV19CS168	SUPRIYA K N	9.41	First Class with Distinction
147	1RV19CS169	SURAJ K R	8.25	First Class with Distinction
148	1RV19CS170	SURYA Y	9.37	First Class with Distinction
149	1RV19CS171	TANGIRALA JAYA SREE LAKSHMI SAVITRI	8.99	First Class with Distinction
150	1RV19CS172	TANMAY JAIN	9.13	First Class with Distinction
151	1RV19CS173	TANMAYANANDA M G P	8.54	First Class with Distinction
152	1RV19CS175	TIRUMALESH MANJUNATHA NAIK	8.15	First Class with Distinction
153	1RV19CS176	V A SRIRAM PRAVEEN	8.96	First Class with Distinction
154	1RV19CS177	VAIBHAV IRAMANI	8.06	First Class with Distinction
155	1RV19CS178	VAIBHAV VATSA	7.78	First Class with Distinction
156	1RV19CS179	VARADRAJ PATIL	8.74	First Class with Distinction
157	1RV19CS180	VASUDEV SETH	7.77	First Class with Distinction
158	1RV19CS181	VEERABHADRA	8.99	First Class with Distinction
159	1RV19CS182	VENJAN V	8.64	First Class with Distinction
160	1RV19CS183	VIHAAN NAMA	8.59	First Class with Distinction
161	1RV19CS184	VIJAY KUMAR S	8.71	First Class with Distinction
162	1RV19CS185	VIJAY RAGHAV	7.86	First Class with Distinction
163	1RV19CS186	VINAYAK ASHOK MIKKAL	9.01	First Class with Distinction
164	1RV19CS187	VISHNU B G BHARADWAJA	9.07	First Class with Distinction
165	1RV19CS189	Y RAGHAVENDRA	9.27	First Class with Distinction
166	1RV19CS190	YASH MANJUNATH SANNECY	8.23	First Class with Distinction
167	1RV19CS191	YASHAS M S	8.42	First Class with Distinction
168	1RV19CS192	YOGESH K N	7.10	First Class

169	1RV19CS193	ADITYA Y JEPPU	9.83	First Class with Distinction
170	1RV19CS194	DIVYE SANCHETI	9.91	First Class with Distinction
171	1RV19CS195	AMAN VERMA	9.35	First Class with Distinction
172	1RV19CS196	APARNA KINI	9.49	First Class with Distinction
173	1RV19CS407	NETHRAVATHI T	6.86	First Class
174	1RV20CS400	AKSHAY R M	6.87	First Class
175	1RV20CS401	BHARATH KUMAR M	7.53	First Class
176	1RV20CS403	GAGANASHREE D	7.53	First Class
177	1RV20CS404	GANAVI G R	7.35	First Class
178	1RV20CS405	IMRAN NAZEERULLA KHAN	6.54	Second Class
179	1RV20CS407	KOMAL M	7.14	First Class
180	1RV20CS408	MAHANTESH KAMATE	7.13	First Class
181	1RV20CS409	MANJULA B	7.42	First Class
182	1RV20CS410	NISARGA H P	7.37	First Class
183	1RV20CS411	P KUSHALA	7.61	First Class
184	1RV20CS412	RAGHU L	6.79	First Class
185	1RV20CS413	ROHIT R P	7.08	First Class
186	1RV20CS416	SWARAJ SANJAY SOMANACHE	8.03	First Class
187	1RV20CS417	SWATHI V	6.89	First Class

Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV19CV001	ABHISHEK KUMAR	7.08	First Class
2	1RV19CV004	ADNAN H KOTAWALA	9.19	First Class with Distinction
3	1RV19CV008	AKHILESH CHAUHAN	7.94	First Class with Distinction
4	1RV19CV009	AMAN KUMAR	7.09	First Class
5	1RV19CV012	ANIL I VANNUR	7.30	First Class
6	1RV19CV013	ANNAPOORNA NYAMAGOUDRA	7.53	First Class
7	1RV19CV014	ANUBHAV PANDEY	7.49	First Class
8	1RV19CV015	ANURAG JAISWAL	7.77	First Class with Distinction
9	1RV19CV016	ANUSHA K	7.03	First Class
10	1RV19CV017	ANUSHA R	7.16	First Class
11	1RV19CV018	ASHIK DEEPAK SHET	6.99	First Class

12	1RV19CV019	ASHUTOSH KUMAR SINGH	7.69	First Class
13	1RV19CV020	AVINASHKUMAR K	8.41	First Class with Distinction
14	1RV19CV021	BASHITHA V	7.06	First Class
15	1RV19CV022	CHINMAY PRASAD S	7.87	First Class with Distinction
16	1RV19CV023	DARSHAN C H	7.91	First Class with Distinction
17	1RV19CV024	DHANVIN C	7.31	First Class
18	1RV19CV025	DHEERAJ R	8.60	First Class with Distinction
19	1RV19CV026	DHRUV CHOUDHARY	6.97	First Class
20	1RV19CV028	GAGAN B NAIK	7.27	First Class
21	1RV19CV030	GURUKUMAR	6.59	Second Class
22	1RV19CV031	HARISHNARAYAN K S	6.68	Second Class
23	1RV19CV032	HARSH NARAYAN	7.15	First Class
24	1RV19CV033	HEMANTH V PATEL	7.77	First Class with Distinction
25	1RV19CV036	HRUDHAY S	6.44	Second Class
26	1RV19CV037	JAGATH KUMAR	7.97	First Class with Distinction
27	1RV19CV038	JAISIMHA V L	6.86	First Class
28	1RV19CV039	JAYANTH RAJU G S	8.01	First Class with Distinction
29	1RV19CV041	KARTHIK N R	7.83	First Class with Distinction
30	1RV19CV042	KHUSHI VAIBHAVI	7.17	First Class
31	1RV19CV043	KISHLEY RATHOUR	6.85	First Class
32	1RV19CV044	KURUGUNDA MOHITH KUMAR	6.59	Second Class
33	1RV19CV045	L HIMA	6.70	Second Class
34	1RV19CV047	M SAI DHEERAJ	7.18	First Class
35	1RV19CV048	MAHANTHESH S	8.71	First Class with Distinction
36	1RV19CV049	MANU B M	7.65	First Class
37	1RV19CV052	MEHREEN MUNEER MIRCHAL	6.94	First Class
38	1RV19CV053	MOHAN KUMAR T N	7.14	First Class
39	1RV19CV054	NEELAPPA	7.22	First Class
40	1RV19CV055	NITHEESH E	8.43	First Class with Distinction
41	1RV19CV057	NITHISH P	7.98	First Class with Distinction

42	1RV19CV059	P TUSHAL GOWDA	7.40	First Class
43	1RV19CV060	PANKAJ RAJENDRA SINGH	7.97	First Class with Distinction
44	1RV19CV063	PAVAN L BEDGE	7.81	First Class with Distinction
45	1RV19CV064	POORVIK B L	6.54	Second Class
46	1RV19CV065	PRADEEP TALAGERI	7.22	First Class
47	1RV19CV067	PRASHANT YASHAVANT MADAKAR	7.98	First Class with Distinction
48	1RV19CV068	PRATEEK SINGH CHAUHAN	7.46	First Class
49	1RV19CV069	PRERANA J SHETTY	7.81	First Class with Distinction
50	1RV19CV070	RAGHAV MAGOTRA	8.17	First Class with Distinction
51	1RV19CV074	RAKSHITH	7.58	First Class
52	1RV19CV075	RAVI RAJ	8.47	First Class with Distinction
53	1RV19CV076	ROHAN SHESHADRI	7.83	First Class with Distinction
54	1RV19CV077	ROHIT V PATIL	7.29	First Class
55	1RV19CV078	S SAI SADAN	6.99	First Class
56	1RV19CV080	SAMRUDH PATILA	7.88	First Class with Distinction
57	1RV19CV081	SAMYUKTHA P RAJAN	7.01	First Class
58	1RV19CV082	SANJAY T G	8.22	First Class with Distinction
59	1RV19CV084	SANTOSH SANGANATTI	7.15	First Class
60	1RV19CV085	SAVITRI P WAGHAMORE	7.22	First Class
61	1RV19CV087	SHAILAJA S	6.28	Second Class
62	1RV19CV089	SHARANYA B V	8.06	First Class with Distinction
63	1RV19CV090	SHOBHIT JAIN	7.06	First Class
64	1RV19CV091	SHOBHITHA H J	7.77	First Class with Distinction
65	1RV19CV092	SHREYAS B C	6.78	First Class
66	1RV19CV093	SHREYAS MISHRA	8.11	First Class with Distinction
67	1RV19CV094	SHREYAS S VANTAMUTTE	7.93	First Class with Distinction
68	1RV19CV095	SHREYAS SHIVANAND KAMATAGI	6.70	Second Class
69	1RV19CV096	SHUBHANK TIWARI	7.63	First Class

70	1RV19CV097	SIDDHARTH P KOCHERI	8.14	First Class with Distinction
71	1RV19CV098	SIDRAM HIPPARAGI	8.10	First Class with Distinction
72	1RV19CV099	SINCHANA K	8.19	First Class with Distinction
73	1RV19CV100	SNEHA	6.38	Second Class
74	1RV19CV101	SRINIVASA NADGOUDA	7.82	First Class with Distinction
75	1RV19CV102	SRISHTI	8.94	First Class with Distinction
76	1RV19CV103	SRUSTI L B	7.94	First Class with Distinction
77	1RV19CV104	SUHAS MONLI	7.22	First Class
78	1RV19CV105	SUMIT ORAON	6.69	Second Class
79	1RV19CV108	SWAPNIL RAJESH LALAGE	7.25	First Class
80	1RV19CV109	SWAROOP TEMBHARE	6.05	Second Class
81	1RV19CV111	SYED MUZAFFAR AHMED	7.50	First Class
82	1RV19CV113	T T M VINAYAKA	7.91	First Class with Distinction
83	1RV19CV115	THEERTHA SWAROOP M	9.05	First Class with Distinction
84	1RV19CV116	TUSHAR SINGH	7.06	First Class
85	1RV19CV118	UDAY B R	6.63	Second Class
86	1RV19CV119	UJJWAL V PATEL	6.61	Second Class
87	1RV19CV120	UMAR MAJEED	7.64	First Class
88	1RV19CV121	VARSHINI P	6.01	Second Class
89	1RV19CV122	VARUN T M	6.37	Second Class
90	1RV19CV123	VASUKI	6.40	Second Class
91	1RV19CV126	YASH AGRAWAL	7.73	First Class
92	1RV19CV127	YUVARAJ D	6.97	First Class
93	1RV19CV130	VITTA HUSSAINVENKATA UDAYKRISHNA	7.58	First Class
94	1RV20CV401	DILEEP S P	8.40	First Class with Distinction
95	1RV20CV402	ISHWARAJ	7.69	First Class
96	1RV20CV403	N SUNDEEP	8.51	First Class with Distinction
97	1RV20CV404	NAVYAANJALI R	8.24	First Class with Distinction
98	1RV20CV406	SAINATH	7.96	First Class with Distinction

99	1RV20CV407	SHIVUKUMAR MALLAPUR	7.13	First Class
100	1RV20CV408	SHREESH SHIRGAONKAR	8.27	First Class with Distinction
101	1RV20CV409	VAIBHAV HOLI	7.86	First Class with Distinction
102	1RV20CV410	VINAYAK SULGEKAR	8.63	First Class with Distinction

Sl.No	USN	NAME	CGPA	CLASS
1	1RV19EC001	A AVINASH PRABHU	9.29	First Class with Distinction
2	1RV19EC002	A SHRIHARSHA	7.56	First Class
3	1RV19EC005	ABHISHEK	8.11	First Class with Distinction
4	1RV19EC006	ABHISHEK MALAVALLI SRIVATHSA	7.96	First Class with Distinction
5	1RV19EC008	ADARSH GUPTA	8.86	First Class with Distinction
6	1RV19EC009	ADITHYA M K	9.32	First Class with Distinction
7	1RV19EC010	ADITYA CHIKKMATH	8.39	First Class with Distinction
8	1RV19EC011	ADITYA N	8.54	First Class with Distinction
9	1RV19EC012	AKANKSH RAMESH MUNIYAPPA	9.07	First Class with Distinction
10	1RV19EC013	AKSHAY MUGALIHAL	8.19	First Class with Distinction
11	1RV19EC014	ALBIN JOSE	6.74	Second Class
12	1RV19EC015	ALEN AJI JOHN	8.12	First Class with Distinction
13	1RV19EC016	AMAN SABLOK	7.98	First Class with Distinction
14	1RV19EC018	AMITESH	7.01	First Class
15	1RV19EC019	AMITHKUMAR VISHWANATH MATH	8.74	First Class with Distinction
16	1RV19EC020	AMOGH MANOHAR	8.22	First Class with Distinction
17	1RV19EC021	ANANYA SHARMA	7.95	First Class with Distinction
18	1RV19EC022	ANIRUDH R	7.03	First Class
19	1RV19EC023	ANOOP K N	8.75	First Class with Distinction

20	1RV19EC024	ANUBHA MITTAL	8.51	First Class with Distinction
21	1RV19EC025	ANUSHKA SUBRAMANIAN	9.06	First Class with Distinction
22	1RV19EC026	ANVAY PANCHOLIYA	9.07	First Class with Distinction
23	1RV19EC027	APURVA D BHARGAVA	9.24	First Class with Distinction
24	1RV19EC028	ARITRA RAYCHAUDHURI	8.41	First Class with Distinction
25	1RV19EC029	ARJUN M	9.30	First Class with Distinction
26	1RV19EC030	ARUN R PATIL	7.68	First Class
27	1RV19EC031	ARYAN R HARWADEKAR	8.38	First Class with Distinction
28	1RV19EC033	ATHMIK HEGDE K	7.84	First Class with Distinction
29	1RV19EC036	AYUSHI WADJIKAR	9.34	First Class with Distinction
30	1RV19EC038	BHARATH M	9.55	First Class with Distinction
31	1RV19EC039	BHAVYA YASRAJ R CHAWDA	8.01	First Class with Distinction
32	1RV19EC040	BHUVAN DORESWAMY	8.87	First Class with Distinction
33	1RV19EC041	CHETAN M ANGADI	8.70	First Class with Distinction
34	1RV19EC042	CHETAN S M	7.42	First Class
35	1RV19EC043	CHINMAYEE C	7.18	First Class
36	1RV19EC046	DEBANJAN SINHA	8.21	First Class with Distinction
37	1RV19EC047	DEEKSHA RAMASWAMY	7.55	First Class
38	1RV19EC048	DEEKSHA SANU	8.22	First Class with Distinction
39	1RV19EC049	DHANUSH B SRIRAM	9.30	First Class with Distinction
40	1RV19EC050	DHIREN G SHEKARAN	5.91	Second Class
41	1RV19EC051	DHULIPALA SUBRAHMANYA RAJEEV	7.01	First Class
42	1RV19EC052	ELUGOTI SHRAVAN KUMAR	8.50	First Class with Distinction
43	1RV19EC053	FAIZAN FAROOQ LONE	7.66	First Class
44	1RV19EC054	GAGAN GOWDA K L	6.37	Second Class
45	1RV19EC055	GALIVEETI ROHITH REDDY	7.98	First Class with Distinction

46	1RV19EC056	GANESH C	8.10	First Class with Distinction
47	1RV19EC057	GAUTHAM T K	8.79	First Class with Distinction
48	1RV19EC058	GAVVALA SANDEEP	7.22	First Class
49	1RV19EC059	GIRIPRASAD N	7.95	First Class with Distinction
50	1RV19EC060	GITANJALI ROY	7.47	First Class
51	1RV19EC061	GUDIPATI SAI DINESH	8.73	First Class with Distinction
52	1RV19EC062	HARSH	7.92	First Class with Distinction
53	1RV19EC063	HARSHIT CHOPRA	6.67	Second Class
54	1RV19EC065	HUMA TABASSUM	8.86	First Class with Distinction
55	1RV19EC068	JAYADITHYA REDDY G	8.83	First Class with Distinction
56	1RV19EC069	JEEVITHA J	8.75	First Class with Distinction
57	1RV19EC070	JESSICA RAJ	8.75	First Class with Distinction
58	1RV19EC071	JOEL D COSTA	8.43	First Class with Distinction
59	1RV19EC072	K ABHIRAMI	8.59	First Class with Distinction
60	1RV19EC073	K U ANUSHKA	7.54	First Class
61	1RV19EC075	KARMUGILAN M	9.06	First Class with Distinction
62	1RV19EC076	KARTHIKEYA R SHERVEGAR	7.63	First Class
63	1RV19EC077	KAUSHIK ARYAN R	8.59	First Class with Distinction
64	1RV19EC078	KEERTHANA G	6.63	Second Class
65	1RV19EC079	KEERTHANA RAMESH	9.56	First Class with Distinction
66	1RV19EC080	KEERTHI B N C	9.21	First Class with Distinction
67	1RV19EC081	KESHVI PATEL	8.26	First Class with Distinction
68	1RV19EC082	KISHAN M	8.41	First Class with Distinction
69	1RV19EC083	KRISHNA PRATHIK B V	9.20	First Class with Distinction
70	1RV19EC084	KRUTHI JAYENDRA	6.87	First Class
71	1RV19EC085	LAKSH M OSWAL	8.46	First Class with Distinction

72	1RV19EC087	M SAI KIRAN	7.95	First Class with Distinction
73	1RV19EC088	MADHUSUDAN S C	8.73	First Class with Distinction
74	1RV19EC089	MAHESHWARI M	9.18	First Class with Distinction
75	1RV19EC090	MANIKANDAN D	9.28	First Class with Distinction
76	1RV19EC091	MANJUNATH PRAKASH SAJJAN	8.31	First Class with Distinction
77	1RV19EC092	MANJUNATH S	6.77	First Class
78	1RV19EC093	MANJUNATHA G S	7.65	First Class
79	1RV19EC095	MIHIR G MANKALE	7.16	First Class
80	1RV19EC097	MOHAN R	8.70	First Class with Distinction
81	1RV19EC098	MONEET MOHAN DEVADIG	7.76	First Class with Distinction
82	1RV19EC099	MOUNAV MAHADEV	8.46	First Class with Distinction
83	1RV19EC100	MOUNIKA SRI RAMESH BABU	8.27	First Class with Distinction
84	1RV19EC102	NAMAN BHATIA	8.77	First Class with Distinction
85	1RV19EC103	NAMIT SINGH	7.84	First Class with Distinction
86	1RV19EC104	NANDITA S	6.95	First Class
87	1RV19EC105	NARAGA VENKATA ESWARA PRIYA BHAVANA	7.52	First Class
88	1RV19EC106	NARSEPALLI PRADYUMNA	8.46	First Class with Distinction
89	1RV19EC107	NAVEEN MADEV NAIK	7.57	First Class
90	1RV19EC108	NILANJAN KUNDU	8.62	First Class with Distinction
91	1RV19EC109	NISHANTH B S	8.45	First Class with Distinction
92	1RV19EC110	NITHIN TEJA REDDY SHANTAYAGARI	7.87	First Class with Distinction
93	1RV19EC111	NOEL D COSTA	8.49	First Class with Distinction
94	1RV19EC112	P KARTIK	9.39	First Class with Distinction
95	1RV19EC113	P KIRAN KUMAR REDDY	8.83	First Class with Distinction
96	1RV19EC115	PALAK CHAUDAHA	6.45	Second Class

97	1RV19EC116	PALAKONDA CHARAN KUMAR REDDY	8.25	First Class with Distinction
98	1RV19EC117	PALLAVI P	9.50	First Class with Distinction
99	1RV19EC118	PARNIKA	9.57	First Class with Distinction
100	1RV19EC119	PENUBADI ASHWITH KUMAR REDDY	8.86	First Class with Distinction
101	1RV19EC120	PERAM RENUKA	7.91	First Class with Distinction
102	1RV19EC122	PONKALA HARSHITA GAYATHRI	8.86	First Class with Distinction
103	1RV19EC123	POOJA ADAGALL	6.73	Second Class
104	1RV19EC124	POTHURI MEHER AMRUTH	7.91	First Class with Distinction
105	1RV19EC126	PRAGYA SEN	8.10	First Class with Distinction
106	1RV19EC128	PRAVEEN	8.45	First Class with Distinction
107	1RV19EC131	PURIMETLA KALYAN RAM CHOWDARY	8.66	First Class with Distinction
108	1RV19EC132	RAHUL H KUMAR	8.85	First Class with Distinction
109	1RV19EC133	RAJAT DHRUVA R	7.06	First Class
110	1RV19EC134	RAJATH ITHAL H L	9.14	First Class with Distinction
111	1RV19EC137	RATNAKAR JAIN	9.14	First Class with Distinction
112	1RV19EC138	REVANT M MARGOL	8.70	First Class with Distinction
113	1RV19EC139	RITESH	8.58	First Class with Distinction
114	1RV19EC140	ROHAN HOLLA M	8.67	First Class with Distinction
115	1RV19EC142	RUTHVIK DUTT	7.33	First Class
116	1RV19EC143	S R DEEKSHITH PRASAD	8.42	First Class with Distinction
117	1RV19EC144	SAGNIK SARKAR	7.31	First Class
118	1RV19EC145	SAMARTH MARPAKWAR	7.95	First Class with Distinction
119	1RV19EC146	SAMEERA J SHARMA	9.27	First Class with Distinction
120	1RV19EC147	SAMISHTH SACHAN	8.22	First Class with Distinction
121	1RV19EC148	SAMPATH D K	6.86	First Class

122	1RV19EC149	SANA DIVYA SREE	8.86	First Class with Distinction
123	1RV19EC150	SANKET MUGALI	8.42	First Class with Distinction
124	1RV19EC151	SARAANSH AGARWAL	8.87	First Class with Distinction
125	1RV19EC153	SATVIK TIWARI	8.86	First Class with Distinction
126	1RV19EC154	SHALINI N GANJAM	8.99	First Class with Distinction
127	1RV19EC155	SHARAT KUMAR MISKIN	8.41	First Class with Distinction
128	1RV19EC156	SHASHANK	8.43	First Class with Distinction
129	1RV19EC157	SHASHANK S	8.30	First Class with Distinction
130	1RV19EC160	SHIVANAND BURLI	8.10	First Class with Distinction
131	1RV19EC161	SHIVAPRASAD	8.87	First Class with Distinction
132	1RV19EC162	SHIVESH SHRAWAN	8.02	First Class with Distinction
133	1RV19EC163	SHRADDHA KULKARNI	8.41	First Class with Distinction
134	1RV19EC164	SHRAVYA VASUDEVA	8.55	First Class with Distinction
135	1RV19EC165	SHREYA G	7.66	First Class
136	1RV19EC166	SHREYAS KUMAR	8.08	First Class with Distinction
137	1RV19EC167	SHRIRANG MADAR	8.17	First Class with Distinction
138	1RV19EC168	SHRISH KULKARNI	7.83	First Class with Distinction
139	1RV19EC169	SIDHANT MISHRA	7.90	First Class with Distinction
140	1RV19EC170	SIMRAN	9.02	First Class with Distinction
141	1RV19EC171	SOUJANYA	7.09	First Class
142	1RV19EC173	SRUJAN MAHESH U N	7.67	First Class
143	1RV19EC174	SUHAS B	8.43	First Class with Distinction
144	1RV19EC175	SUMANTH E	7.25	First Class
145	1RV19EC177	SWETHA S	7.72	First Class
146	1RV19EC178	TANMAY SINHA	8.94	First Class with Distinction

147	1RV19EC179	V DHANUSH	8.40	First Class with Distinction
148	1RV19EC180	VARAD SUNIL DAITHANKAR	7.91	First Class with Distinction
149	1RV19EC181	VARUN M	7.08	First Class
150	1RV19EC182	VIDHULA. H	7.65	First Class
151	1RV19EC183	VIKAS BIJJAL	7.71	First Class
152	1RV19EC185	VISHNU	6.69	Second Class
153	1RV19EC186	VISHRUTH A R	6.95	First Class
154	1RV19EC188	YASH GANESH NAIK	8.47	First Class with Distinction
155	1RV19EC189	YASH RAJ CHOUDHARY	7.75	First Class with Distinction
156	1RV19EC192	HRITHIK RAJ	8.54	First Class with Distinction
157	1RV19EC193	NAMRA QUASIM	9.17	First Class with Distinction
158	1RV19EC194	MAKAM MANIKYA RAKSHITH	9.16	First Class with Distinction
159	1RV19EC195	RAJAT RAJ	9.17	First Class with Distinction
160	1RV19EC197	SAKSHAM SHARMA	9.44	First Class with Distinction
161	1RV19EC198	VINITHA V	9.03	First Class with Distinction
162	1RV19EC199	YESHITHA B	9.05	First Class with Distinction
163	1RV19EC200	ROHITH T M	8.30	First Class with Distinction
164	1RV20EC400	AKASH S SHANBHAG	7.96	First Class with Distinction
165	1RV20EC401	DHANANJAYKUMAR	7.27	First Class
166	1RV20EC402	KAVANA M V	7.70	First Class
167	1RV20EC403	M BHUMIKA	6.91	First Class
168	1RV20EC404	MOHANGOWDA S N	8.23	First Class with Distinction
169	1RV20EC405	NAGARAJ S BHASME	7.62	First Class
170	1RV20EC406	PRAJWAL T R	7.32	First Class
171	1RV20EC407	PRASHANTH V	6.43	Second Class
172	1RV20EC408	RESHMA S	8.29	First Class with Distinction
173	1RV20EC409	SAHANA M D	7.10	First Class
174	1RV20EC411	SHEETHAL K S	7.03	First Class
175	1RV20EC413	SHUBHAM PATIL	7.55	First Class

176	1RV20EC414	SRINIVAS NIHAR K	7.07	First Class
177	1RV20EC415	SURAJ SINGH	6.80	First Class
178	1RV20EC416	UDAY V DAIVADNYA	6.53	Second Class
179	1RV20EC417	VIGHNESH MOHAN NAIK	8.10	First Class with Distinction

Sl.No	USN	NAME	CGPA	CLASS
1	1RV18EE043	RAVINANDANA R A	6.96	First Class
2	1RV19EE001	ADITYA SINGH	8.61	First Class with Distinction
3	1RV19EE003	AKASH S SINNOOR	7.98	First Class with Distinction
4	1RV19EE005	AKSHITA SINGH	7.79	First Class with Distinction
5	1RV19EE006	AMAN MOHAMMED SHOIB	6.86	First Class
6	1RV19EE012	DHRUVIL KOTHARI	7.50	First Class
7	1RV19EE014	G GIRIRAJ	8.43	First Class with Distinction
8	1RV19EE015	GOWDICHERUVU CHAKRADHAR REDDY	7.82	First Class with Distinction
9	1RV19EE016	GURUPRASAD	7.15	First Class
10	1RV19EE017	H B ASHA	7.69	First Class
11	1RV19EE018	HARSH RAJ	6.28	Second Class
12	1RV19EE020	JEFFREY NOEL AROKIARAJ	7.59	First Class
13	1RV19EE021	KAVERI BANDIGANI	8.49	First Class with Distinction
14	1RV19EE022	KIRAN KUMAR	7.25	First Class
15	1RV19EE024	MADHUKESH V	7.38	First Class
16	1RV19EE027	MALLIKARJUN ISHWARGOND	8.07	First Class with Distinction
17	1RV19EE028	MANAS M	7.62	First Class
18	1RV19EE030	NAGAVENI M HAKKAPAKKI	7.35	First Class
19	1RV19EE031	NITISH JADHAV	7.45	First Class
20	1RV19EE032	PRAJWAL DH	6.62	Second Class
21	1RV19EE034	RAKHESH NAIK	7.31	First Class
22	1RV19EE036	ROHINI RAGA	8.35	First Class with Distinction
23	1RV19EE037	ROHIT ANAND TAMBEKAR	8.73	First Class with Distinction
24	1RV19EE038	RUBLEEN KAUR HANSPAL	7.72	First Class

25	1RV19EE040	SANAT KUMAR SRIVASTAVA	8.12	First Class with Distinction
26	1RV19EE041	SATVIK SANJEEV BHUJLE	7.46	First Class
27	1RV19EE042	SAURABH KUMAR	7.06	First Class
28	1RV19EE043	SHASHIKIRAN S KUPNOOR	8.47	First Class with Distinction
29	1RV19EE044	SHASHWAT SHIVANSH	6.68	Second Class
30	1RV19EE045	SHIKHAR RAIZADAY	8.42	First Class with Distinction
31	1RV19EE047	SHREYANSH AGRAWAL	7.03	First Class
32	1RV19EE049	SHRUSTI CHANNAL	8.90	First Class with Distinction
33	1RV19EE053	SUSHMA N S	8.34	First Class with Distinction
34	1RV19EE055	TALIB YOUSUF CHAN	8.26	First Class with Distinction
35	1RV19EE056	TEJUS SANKAR	7.33	First Class
36	1RV19EE057	UTKARSH THAKKAR	7.27	First Class
37	1RV19EE058	VANSH NANDWANA	7.93	First Class with Distinction
38	1RV19EE059	VARSHINI TOLPADI	8.57	First Class with Distinction
39	1RV19EE061	VINAY P	8.25	First Class with Distinction
40	1RV19EE062	VIVEKANANDA D P	6.78	First Class
41	1RV19EE063	YASH P GUND	7.92	First Class with Distinction
42	1RV19EE066	ASHRITHA K	8.53	First Class with Distinction
43	1RV19EE067	SHARANAPPA ULAGI	8.27	First Class with Distinction
44	1RV19EE068	PIYUSH VERMA	7.39	First Class
45	1RV19EE069	APALA GWALERA	8.10	First Class with Distinction
46	1RV19EE070	CHAITRA RAVINDRA SANGAREDDY	7.75	First Class with Distinction
47	1RV19EE071	SOURABH RAJA	7.39	First Class
48	1RV19EE072	AKARSH ANAND	7.50	First Class
49	1RV19EE073	DEEPTHI.H.REDDY	7.29	First Class
50	1RV19EE074	ADARSH KUMAR JHA	7.82	First Class with Distinction
51	1RV20EE400	ABHISHEK K HULKUND	7.86	First Class
52	1RV20EE401	ANURAG N	7.69	First Class
53	1RV20EE402	LATHESH SHETTY K K	8.17	First Class
54	1RV20EE403	MALLARADDY	7.24	First Class

55	1RV20EE404	RIDA ARFAIN A	7.59	First Class

Graduate List (2022-23)				
Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV19EI001	A VISHNU CHARAN	9.34	First Class with Distinction
2	1RV19EI004	AMAN KUMAR SINGH	8.39	First Class with Distinction
3	1RV19EI005	ANAND M SHARMA	8.89	First Class with Distinction
4	1RV19EI006	ANAND RAJ	8.14	First Class with Distinction
5	1RV19EI007	ANANYA D	8.45	First Class with Distinction
6	1RV19EI008	ANISHA SAHA	7.88	First Class with Distinction
7	1RV19EI010	ANKIT SRIVASTAVA	8.22	First Class with Distinction
8	1RV19EI012	ARYAN AMARNANI	7.77	First Class with Distinction
9	1RV19EI014	BINDU V	8.17	First Class with Distinction
10	1RV19EI015	CHANDHRIKKA R	7.06	First Class
11	1RV19EI017	FARHAN AKHTER	8.51	First Class with Distinction
12	1RV19EI018	FARID	7.06	First Class
13	1RV19EI019	GANESH C L	8.55	First Class with Distinction
14	1RV19EI021	HARSH KUMAR	8.27	First Class with Distinction
15	1RV19EI023	HRITIK RAJ	7.75	First Class with Distinction
16	1RV19EI025	JENNIFER E	8.66	First Class with Distinction
17	1RV19EI026	JHANHAVI R	9.66	First Class with Distinction
18	1RV19EI028	MUDIT RATHI	8.38	First Class with Distinction
19	1RV19EI030	NEHA JAGANNATH	8.93	First Class with Distinction
20	1RV19EI031	NIHAL B KARAMUDI	8.23	First Class with Distinction
21	1RV19EI032	NIKHIL K B	7.82	First Class with Distinction
22	1RV19EI033	PANKAJ KANKANI	8.92	First Class with Distinction
23	1RV19EI034	PRASHANT VERMA	7.81	First Class with Distinction
24	1RV19EI040	ROHIT KRANTIKUMAR MUDHOL	8.07	First Class with Distinction
25	1RV19EI043	S VARUN	8.19	First Class with Distinction
26	1RV19EI046	SAKSHI BHARTI	7.94	First Class with Distinction
27	1RV19EI047	SAMIYA GOYAL	9.05	First Class with Distinction
28	1RV19EI048	SANGAMESH WALADUNKI	8.15	First Class with Distinction
29	1RV19EI049	SAURAV AGRAWAL	9.14	First Class with Distinction
30	1RV19EI050	SHASHWAT MISHRA	8.67	First Class with Distinction
31	1RV19EI051	SHEIKH MOHAMMED RAAZI	8.28	First Class with Distinction
32	1RV19EI052	SHILPA S	8.91	First Class with Distinction

33	1RV19EI054	SOUJANYA V BHAT	9.56	First Class with Distinction
34	1RV19EI055	SPOORTHI NIRANJAN BADAD	7.46	First Class
35	1RV19EI056	SRISHTI R	8.26	First Class with Distinction
36	1RV19EI058	TANGUTURI SATHYA DHEERAJ KUMAR	8.02	First Class with Distinction
37	1RV19EI061	VAISHNAVI SOLAPUR	9.18	First Class with Distinction
38	1RV19EI062	VIKAS KONTEPPA KOTRE	7.58	First Class
39	1RV19EI063	YASH RAJ	7.60	First Class
40	1RV19EI064	SUHAS SHANMUKHA BANAKAR	8.29	First Class with Distinction
41	1RV19EI065	RAJ GAURAV	7.18	First Class
42	1RV19EI401	JAYAPALA	7.07	First Class
43	1RV20EI400	AFTAB TAMBOLI	7.15	First Class
44	1RV20EI403	KAVYASHREE N	7.55	First Class
45	1RV20EI404	PRAJWAL B GADAD	7.12	First Class

Graduate List (2022-23)				
Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV19ET001	A M ANJANA SUNDARI	8.89	First Class with Distinction
2	1RV19ET002	AASTHA AAYUSHI	7.25	First Class
3	1RV19ET003	ABDUR REHMAN	8.62	First Class with Distinction
4	1RV19ET004	ABHIJEET	7.25	First Class
5	1RV19ET006	AISHWARY VISHWAKARMA	6.46	Second Class
6	1RV19ET007	ANUSHA PATIL	7.47	First Class
7	1RV19ET008	APALA DAS	8.23	First Class with Distinction
8	1RV19ET009	ARUL SHRIVASTAVA	6.87	First Class
9	1RV19ET010	ATUL RAGHAVENDRA KATHAVATE	7.01	First Class
10	1RV19ET011	ATUL SAI S S	7.36	First Class
11	1RV19ET012	AVANEETH ANIL	8.17	First Class with Distinction
12	1RV19ET013	AYUSH AGARWAL	6.95	First Class
13	1RV19ET016	BISHAL KUMAR	8.03	First Class with Distinction
14	1RV19ET017	D R UPENDRASHETTY	7.85	First Class with Distinction
15	1RV19ET018	DARSHAN H R	8.23	First Class with Distinction

16	1RV19ET019	DEEKSHITH ANANTHA	7.90	First Class with Distinction
17	1RV19ET020	DEEPAK GOWDA K	7.58	First Class
18	1RV19ET021	DEVAM BHATT	7.47	First Class
19	1RV19ET022	DHEERAJ V C	8.87	First Class with Distinction
20	1RV19ET023	FATEMA ABBAS LOKHANDWALA	8.34	First Class with Distinction
21	1RV19ET024	GUJJULA SATHVIK	7.02	First Class
22	1RV19ET025	JAMMALAMADUGU SHAIK TAUFEEQ AHMED	7.92	First Class with Distinction
23	1RV19ET026	KOTHA NAGA VENKATA SAI CHARAN	6.67	Second Class
24	1RV19ET028	MALLIKARJUN G	8.05	First Class with Distinction
25	1RV19ET029	MAMATA MANJUNATH NAIK	7.58	First Class
26	1RV19ET030	MANAS GOYAL	7.89	First Class with Distinction
27	1RV19ET032	MEGHA P	8.36	First Class with Distinction
28	1RV19ET033	MEGHANA K S	6.81	First Class
29	1RV19ET034	MUKUL DEV CHOUDHARY	8.06	First Class with Distinction
30	1RV19ET035	NAGAVIKA TULSIDAS KAMAT	8.13	First Class with Distinction
31	1RV19ET036	PRASANSA JAISWAL	7.34	First Class
32	1RV19ET037	PRATIK AGARWALL	8.27	First Class with Distinction
33	1RV19ET038	PRERANA M	8.15	First Class with Distinction
34	1RV19ET039	RACHANA B	7.18	First Class
35	1RV19ET040	RAHUL H P	8.13	First Class with Distinction
36	1RV19ET041	RASVI RANJAN MALIGI	6.75	First Class
37	1RV19ET042	RIDDHI L	7.98	First Class with Distinction
38	1RV19ET045	ROHIT KUMAR	7.66	First Class
39	1RV19ET046	SAGAR H M	7.25	First Class
40	1RV19ET047	SAHIL AHUJA	7.59	First Class
41	1RV19ET048	SAI TEJA RAMAGIRI	7.97	First Class with Distinction
42	1RV19ET050	SAMUDYATA A	8.82	First Class with Distinction

43	1RV19ET051	SHASWAT VALIVATI	8.08	First Class with Distinction
44	1RV19ET052	SHREEPUNYA JAGATE	7.79	First Class with Distinction
45	1RV19ET055	SUMUKHA S SRIVATSA	8.96	First Class with Distinction
46	1RV19ET056	SURBHI CHOUDHARY	8.54	First Class with Distinction
47	1RV19ET057	T R SAJID HAMEED	7.26	First Class
48	1RV19ET058	TEJAS MEHTA	7.18	First Class
49	1RV19ET059	THANMAYEE REDDY K	7.10	First Class
50	1RV19ET063	YUKTHA SHREE H I	7.26	First Class
51	1RV19ET064	HITHAISHI SURENDRA	8.26	First Class with Distinction
52	1RV19ET065	S BHUVANA	8.51	First Class with Distinction
53	1RV19ET066	DIPESH PARERIYA N	8.14	First Class with Distinction
54	1RV20ET400	AKSHITHA S	7.54	First Class
55	1RV20ET402	ANJALI M	7.39	First Class
56	1RV20ET403	KEERTHANA M V	7.60	First Class
57	1RV20ET405	SHREYAS K G	6.86	First Class

Graduate List (2022-23)				
Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV19IM001	ABDULLA	7.25	First Class
2	1RV19IM002	ADITYA K S	7.26	First Class
3	1RV19IM003	AKSHAY S NAIR	5.52	Pass Class
4	1RV19IM005	AMRUTH MADHUSUDHAN	8.05	First Class with Distinction
5	1RV19IM006	ANIMESH KUMAR	6.81	First Class
6	1RV19IM007	ANJALI B	8.46	First Class with Distinction
7	1RV19IM008	ANJALI J	6.54	Second Class
8	1RV19IM011	BRINDA SAI	9.39	First Class with Distinction
9	1RV19IM012	CHAITHANYA M GOWDA	8.23	First Class with Distinction
10	1RV19IM014	D R KEERTHANA	6.89	First Class
11	1RV19IM015	DEEPAK RAJ D	7.58	First Class

12	1RV19IM016	DHANUSH R	7.08	First Class
13	1RV19IM017	EDWIN BENEDICT T	7.51	First Class
14	1RV19IM018	G DEEPIKA	8.06	First Class with Distinction
15	1RV19IM021	HARSHIT PANSARI	7.59	First Class
16	1RV19IM022	HARSHITHA M	8.88	First Class with Distinction
17	1RV19IM023	HIRANMAYI NIRANJAN	9.22	First Class with Distinction
18	1RV19IM025	ISHAAN J SHETTY	6.76	First Class
19	1RV19IM026	KARTIK ANSHUMAN VYAKARANAM	8.66	First Class with Distinction
20	1RV19IM027	KISHOR K	7.35	First Class
21	1RV19IM028	KOTAPATI PRANAVI	7.78	First Class with Distinction
22	1RV19IM029	MAITHREYA B	7.70	First Class
23	1RV19IM030	MANISH KASWAN	8.01	First Class with Distinction
24	1RV19IM031	MOHIT AGARWAL	8.58	First Class with Distinction
25	1RV19IM032	MOHIT KUMAR NIGAM	7.89	First Class with Distinction
26	1RV19IM033	MRINAL ANAND	8.19	First Class with Distinction
27	1RV19IM035	MUTHAKANA YAGNEESH WAR REDDY	7.62	First Class
28	1RV19IM036	NAVYA MISHRA	7.69	First Class
29	1RV19IM037	NAYAN SHASHANK A V	8.19	First Class with Distinction
30	1RV19IM038	NISHANT DANIEL	6.45	Second Class
31	1RV19IM039	P R BADRINATH	8.05	First Class with Distinction
32	1RV19IM040	PRAJITH KUMAR V	7.33	First Class
33	1RV19IM041	PRAJWAL P N	6.15	Second Class
34	1RV19IM042	PRAJWAL S KURTKOTI	6.44	Second Class
35	1RV19IM043	PRANEET BANERJEE	8.23	First Class with Distinction
36	1RV19IM047	RITIK PABBARAJU	8.16	First Class with Distinction
37	1RV19IM048	RODDAM AJITH SREENIVAS	7.75	First Class with Distinction
38	1RV19IM049	S BHARATH PRAKASH	7.40	First Class

39	1RV19IM051	SHACHIKA THANIGAIVELU	8.78	First Class with Distinction
40	1RV19IM052	SHIKHAR KUMAR PANDEY	7.07	First Class
41	1RV19IM053	SHIVAANI N	7.17	First Class
42	1RV19IM055	SHUBH TIWARI	7.41	First Class
43	1RV19IM056	SHYAMALA BABU C S	7.51	First Class
44	1RV19IM058	SRIYANSH HETAMSARIA	8.42	First Class with Distinction
45	1RV19IM059	UHA KRISHNAN V	8.91	First Class with Distinction
46	1RV19IM060	VENKATESH H M	6.15	Second Class
47	1RV19IM061	VIGNESH SHARAN PORKODIAN BABU	6.39	Second Class
48	1RV19IM064	RAGHAV KHANDELWAL	7.58	First Class
49	1RV19IM065	RIBHU SAHNI	7.75	First Class with Distinction
50	1RV20IM400	BASANAGOUDA GIRIYAPPAGOUDRA	7.43	First Class
51	1RV20IM401	JAMBUKESWARA	7.57	First Class
52	1RV20IM402	KIRAN D	7.20	First Class
53	1RV20IM404	PRASHANTH M U	7.62	First Class

Graduate List (2022-23)				
Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV19IS001	ABHIRAM SRIVATHSA K H	8.59	First Class with Distinction
2	1RV19IS002	AKASH KALMESH HIREMATH	9.56	First Class with Distinction
3	1RV19IS003	AKASH SHETTY	9.49	First Class with Distinction
4	1RV19IS004	AKSHAY A KUMAR	8.81	First Class with Distinction
5	1RV19IS005	AMEYA MAHADEV GONAL	9.10	First Class with Distinction
6	1RV19IS006	ANIMESH SINGH	8.57	First Class with Distinction
7	1RV19IS007	ANURAG ASHISH KHOT	8.85	First Class with Distinction
8	1RV19IS009	ARUN KUMAR S L	7.63	First Class
9	1RV19IS010	ATHARV PRASHANT WANI	8.62	First Class with Distinction
10	1RV19IS011	AYUSH GAUTAM	6.66	Second Class

11	1RV19IS012	AYUSH GUPTA	8.33	First Class with Distinction
12	1RV19IS013	B CHIRAG BALIGA	8.86	First Class with Distinction
13	1RV19IS016	CHANDANA J	8.21	First Class with Distinction
14	1RV19IS017	CHIRAG K SHETTY	8.39	First Class with Distinction
15	1RV19IS019	GORLA CHARAN SAI CHOWDARY	8.91	First Class with Distinction
16	1RV19IS020	HARSHIT HANDA	8.86	First Class with Distinction
17	1RV19IS021	K A SUMUKH	8.89	First Class with Distinction
18	1RV19IS023	KETAN VAISH	9.33	First Class with Distinction
19	1RV19IS024	KHUSHI S L	8.67	First Class with Distinction
20	1RV19IS025	KUSHAGRA GUPTA	7.95	First Class with Distinction
21	1RV19IS026	KUSHAGRA JAIN	7.99	First Class with Distinction
22	1RV19IS027	MOHAMMED ABDUL RAZAK WAHAB	8.67	First Class with Distinction
23	1RV19IS028	MONIKA S	8.81	First Class with Distinction
24	1RV19IS029	N M NISHANT	8.40	First Class with Distinction
25	1RV19IS030	NACHIKETA NALIN	8.54	First Class with Distinction
26	1RV19IS031	NIDHI H HALAPPANAVAR	9.55	First Class with Distinction
27	1RV19IS032	NIKHIL SANDILYA	8.45	First Class with Distinction
28	1RV19IS035	O S SUMUKH	8.88	First Class with Distinction
29	1RV19IS036	PRASHANT ABBI	8.81	First Class with Distinction
30	1RV19IS037	PRINSON FERNANDES	9.54	First Class with Distinction
31	1RV19IS038	RACHITA AGARWAL	7.62	First Class
32	1RV19IS039	RAJOT SAHA	7.42	First Class
33	1RV19IS040	RISHABH R	8.82	First Class with Distinction
34	1RV19IS041	RISHABH SHARMA	8.29	First Class with Distinction

35	1RV19IS043	RONIT HARISHKUMAR AGARWAL	8.90	First Class with Distinction
36	1RV19IS044	S ADVAITH	8.95	First Class with Distinction
37	1RV19IS045	SAGAR SHARMA	7.03	First Class
38	1RV19IS046	SAHIL SHARMA	8.73	First Class with Distinction
39	1RV19IS047	SENTHOORAN B	9.09	First Class with Distinction
40	1RV19IS048	SHAKTHI SAGAR M	8.38	First Class with Distinction
41	1RV19IS049	SHIVAM PRAJAPATI	9.49	First Class with Distinction
42	1RV19IS050	SHIVANAND	7.75	First Class with Distinction
43	1RV19IS051	SHIVANAND SUNAGAR	8.54	First Class with Distinction
44	1RV19IS053	SRI CHANDANA K	7.37	First Class
45	1RV19IS054	SRI VISHNU D	9.01	First Class with Distinction
46	1RV19IS055	SRIHARI C	9.23	First Class with Distinction
47	1RV19IS056	SRIJAN DEVNATH	7.85	First Class with Distinction
48	1RV19IS057	SRIRAM BALAKRISHNA	7.71	First Class
49	1RV19IS058	SURAJ RAJSHEKHAR MUKKANNAVAR	7.51	First Class
50	1RV19IS059	TARUN SRIVATSA V S	8.99	First Class with Distinction
51	1RV19IS060	UDAY A S	8.29	First Class with Distinction
52	1RV19IS061	VAIBHAV PORWAL	8.58	First Class with Distinction
53	1RV19IS062	VARSHINI L	7.79	First Class with Distinction
54	1RV19IS063	VIKRAM SHENOY	8.67	First Class with Distinction
55	1RV19IS064	VINAYAK KRISHAN PRASAD	8.77	First Class with Distinction
56	1RV19IS065	DANDAVATI SUHAS	8.71	First Class with Distinction
57	1RV19IS066	SHIVA SHASHANK DHAVALA	9.21	First Class with Distinction
58	1RV19IS067	MOHAMMED IHTESHAM	9.00	First Class with Distinction

59	1RV20IS400	G CHANNA BASAVA	6.99	First Class
60	1RV20IS401	GURUPRASAD K	7.97	First Class
61	1RV20IS402	NAGARAJ SHRIKRISHNA HEGDE	7.79	First Class
62	1RV20IS403	PRIYA KUMARI	6.54	Second Class
63	1RV20IS404	SUSHMITHA S	6.60	Second Class
64	1RV20IS405	VIGNESH	7.61	First Class

Graduate List (2022-23)				
Sl.No	**USN**	**NAME**	**CGPA**	**CLASS**
1	1RV18ME018	ANIRUDH ARUN DURG	6.91	First Class
2	1RV19ME001	AADVIK JAIN	7.22	First Class
3	1RV19ME002	ABHISHEK ALVA	8.94	First Class with Distinction
4	1RV19ME003	ABHISHEK HULLUR	8.54	First Class with Distinction
5	1RV19ME004	ABHISHEK PRAKASH PATTAR	7.75	First Class with Distinction
6	1RV19ME005	ABHISHEK SHETTY	9.22	First Class with Distinction
7	1RV19ME006	ADHIL CHOUDHARY	7.96	First Class with Distinction
8	1RV19ME008	ADITYA SHYAM ROSHAN	7.61	First Class
9	1RV19ME010	AKSHAY SHIVANAND SHETTAR	7.76	First Class with Distinction
10	1RV19ME011	AKSHIT TYAGI	6.93	First Class
11	1RV19ME012	AMAN KUMAR AGARWALA	6.76	First Class
12	1RV19ME013	AMITH SHEKHAR GATTY	8.58	First Class with Distinction
13	1RV19ME014	ANAND B PATIL	7.87	First Class with Distinction
14	1RV19ME015	ANANYA U ACHAR	7.86	First Class with Distinction
15	1RV19ME016	ANJAN B V	7.95	First Class with Distinction
16	1RV19ME019	ANURAG	8.23	First Class with Distinction
17	1RV19ME020	ANVESHA YADAV	8.38	First Class with Distinction
18	1RV19ME021	ARIF GULLOLI	7.83	First Class with Distinction

19	1RV19ME022	ARJUN ANAND BHARADWAJ	8.23	First Class with Distinction
20	1RV19ME023	ARNAB TEWARY	6.26	Second Class
21	1RV19ME024	ARUNKUMAR D S	6.77	First Class
22	1RV19ME025	ARYAN G S	6.84	First Class
23	1RV19ME026	ASHMIT PRAJAPATI	8.70	First Class with Distinction
24	1RV19ME028	AYAN ATAL	9.15	First Class with Distinction
25	1RV19ME029	AYUSH SHARMA	8.56	First Class with Distinction
26	1RV19ME031	BASAPATHI SAI SRI VASTAV	7.49	First Class
27	1RV19ME033	BHUVAN KOULAGI	6.87	First Class
28	1RV19ME034	BURLE NAGA SAI KRISHNA VAMSI	7.95	First Class with Distinction
29	1RV19ME036	C MANJUNATH	7.67	First Class
30	1RV19ME037	CHAMAN S	8.10	First Class with Distinction
31	1RV19ME038	CHINCHOLI HRISHIKESH MAHESH	6.78	First Class
32	1RV19ME039	D PANKAJ	7.47	First Class
33	1RV19ME040	DARSHAN C	7.75	First Class with Distinction
34	1RV19ME041	DARSHAN M N	7.97	First Class with Distinction
35	1RV19ME042	DEEKSHA BHARATH	8.44	First Class with Distinction
36	1RV19ME043	DESHMUKH SIDDHESH SUDHIR	7.29	First Class
37	1RV19ME045	DHRUV KHATRI	7.34	First Class
38	1RV19ME046	G YASHIV BALA	7.86	First Class with Distinction
39	1RV19ME047	GAGAN K	8.62	First Class with Distinction
40	1RV19ME048	GURUGANESH MADDODI	8.91	First Class with Distinction
41	1RV19ME049	GURUPRASAD NIRWANI KABADAGI	7.87	First Class with Distinction
42	1RV19ME050	GURUSHARAN GOGGA	7.74	First Class
43	1RV19ME051	HARISH R NANDANI	7.95	First Class with Distinction
44	1RV19ME053	HRISHIKESH DAS	8.82	First Class with Distinction
45	1RV19ME054	ISHAAN PANDIT	8.44	First Class with Distinction

46	1RV19ME055	JEEVAN RAJ	7.00	First Class
47	1RV19ME056	JOSHI GARVIT	8.75	First Class with Distinction
48	1RV19ME057	JOSHI PRADYUMNA NARENDRA	7.71	First Class
49	1RV19ME059	KARTHIKSAI SRIDHAR	7.59	First Class
50	1RV19ME060	KARTIK NAVALGUND	7.60	First Class
51	1RV19ME061	KAUSHIK S	7.63	First Class
52	1RV19ME062	KRISHNA M GAVALI	7.62	First Class
53	1RV19ME064	MALIK KALANDAR MULLA	9.34	First Class with Distinction
54	1RV19ME065	MALLIKARJUN DESAI	8.59	First Class with Distinction
55	1RV19ME066	MALLIKARJUN MAHAJANSHETTI	8.65	First Class with Distinction
56	1RV19ME067	MALLINATH	7.88	First Class with Distinction
57	1RV19ME068	MAYAPPA MANVAR	8.22	First Class with Distinction
58	1RV19ME069	MEETH M PAREKH	7.47	First Class
59	1RV19ME070	MONU KUMAR	8.42	First Class with Distinction
60	1RV19ME071	NACHIKETHA B N	8.57	First Class with Distinction
61	1RV19ME073	NEERAJ SHRIGIRI	7.24	First Class
62	1RV19ME074	NISCHITH S THAMMAIAH	7.93	First Class with Distinction
63	1RV19ME077	PRANAV A	8.53	First Class with Distinction
64	1RV19ME079	PRATIK HANDI	8.28	First Class with Distinction
65	1RV19ME080	PRATIK SEETHARAM	9.21	First Class with Distinction
66	1RV19ME081	PURVIK V GOWDA	7.08	First Class
67	1RV19ME083	RAHUL SATHEESH NAIR	7.27	First Class
68	1RV19ME084	RAKSHITH A PUTTASWAMY	8.51	First Class with Distinction
69	1RV19ME086	REVANNA CHANDRAKANT RAMAGONATTI	8.13	First Class with Distinction
70	1RV19ME087	RITHWIK SHANKAR RAJ	9.33	First Class with Distinction
71	1RV19ME088	RITIK AGRAWAL	7.08	First Class
72	1RV19ME089	RITVIK ARYA	8.62	First Class with Distinction

73	1RV19ME090	ROHAN GANGA DEB	7.80	First Class with Distinction
74	1RV19ME091	SAANVI SINGH NARWAL	6.60	Second Class
75	1RV19ME093	SAMEER KUDURYAL	7.08	First Class
76	1RV19ME094	SAMPATKUMAR MANTUR	7.78	First Class with Distinction
77	1RV19ME095	SAMPREET DINAKAR NAYAK	8.89	First Class with Distinction
78	1RV19ME096	SARTHAK DAVE	8.54	First Class with Distinction
79	1RV19ME097	SATHISH M	7.45	First Class
80	1RV19ME098	SHARANABASU D KOTTALAGI	7.45	First Class
81	1RV19ME099	SHIKHAR SAXENA	8.01	First Class with Distinction
82	1RV19ME101	SHREYAS HAVALDAR	8.30	First Class with Distinction
83	1RV19ME102	SHREYAS LAXMAN JOGIN	7.47	First Class
84	1RV19ME105	SKANDA R	8.63	First Class with Distinction
85	1RV19ME106	SOHEL	6.53	Second Class
86	1RV19ME108	SRIDHAR	7.22	First Class
87	1RV19ME110	SUHAN MASCARENHAS	7.62	First Class
88	1RV19ME112	TARINI ATHICOM	7.72	First Class
89	1RV19ME113	TUMMALA RUPESH KUMAR	8.39	First Class with Distinction
90	1RV19ME114	ULLAS GOWDA G K	7.18	First Class
91	1RV19ME115	UTKARSH GOENKA	8.79	First Class with Distinction
92	1RV19ME118	VENKATANARASIMHA G HEGDE	9.57	First Class with Distinction
93	1RV19ME119	VIJAYAKUMARA S	8.20	First Class with Distinction
94	1RV19ME120	VINAYAK U NAVALAGI	7.07	First Class
95	1RV19ME122	VITTAL BHAGIRATH PAI	7.93	First Class with Distinction
96	1RV19ME123	YASHAS R	7.21	First Class
97	1RV19ME124	YASHASWI RAJ	7.41	First Class
98	1RV19ME125	YELLAMPALLI SUJITH KUMAR REDDY	8.40	First Class with Distinction
99	1RV19ME126	YOGESH R	7.58	First Class
100	1RV19ME127	PRATIK YADAV	7.55	First Class

101	1RV19ME128	RITIKA PANDEY	7.55	First Class
102	1RV19ME129	CHINMAI S SHIVARU	8.43	First Class with Distinction
103	1RV19ME130	T M SHREYAS	8.25	First Class with Distinction
104	1RV19ME131	MARRI PRUTHVI KRISHNA	7.18	First Class
105	1RV20ME400	HRUTU MAHESH BASTAWADKAR	7.63	First Class
106	1RV20ME401	KARTHICK S	8.24	First Class with Distinction
107	1RV20ME402	KARTHIK A ARER	8.07	First Class with Distinction
108	1RV20ME404	OMKAR ASHOK KUCHANUR	8.32	First Class with Distinction
109	1RV20ME405	PARASURAM	7.32	First Class
110	1RV20ME406	PRADEEPA S	8.04	First Class with Distinction
111	1RV20ME407	PRATEEK G JARALI	8.20	First Class with Distinction
112	1RV20ME408	RAJESH GOWDA PATIL	8.05	First Class with Distinction
113	1RV20ME409	SHIVANAND HOSUR	8.18	First Class with Distinction
114	1RV20ME410	SHRIKANT POOJAR	8.24	First Class with Distinction
115	1RV20ME411	SRIDHARA S	8.76	First Class with Distinction

RV COLLEGE OF ENGINEERING		
List of students eligible for BE (Honours) Degree		
Total - 29 students		
BIOTECHNOLOGY		
SL NO	**USN**	**STUDENT NAME**
1	1RV19BT001	AAKAANKSHA KAUL
2	1RV19BT007	ASHLY BINOY
3	1RV19BT020	JOANNA NICOLE D SOUZA
4	1RV19BT056	VIBHA R
INDUSTRIAL ENGINEERING & MANAGEMENT		
SL NO	**USN**	**STUDENT NAME**
1	1RV19IM011	BRINDA SAI
2	1RV19IM022	HARSHITHA M
3	1RV19IM023	HIRANMAYI NIRANJAN
4	1RV19IM051	SHACHIKA THANGAIVELU
5	1RV19IM059	UHA KRISHNAN V
MECHANICAL ENGINEERING		
SL NO	**USN**	**STUDENT NAME**
1	1RV19ME002	ABHISHEK ALVA
2	1RV19ME013	AMITH SHEKHAR GATTY
3	1RV19ME042	DEEKSHA BHARATH
4	1RV19ME047	GAGAN K
5	1RV19ME048	GURUGANESH MADDODI
6	1RV19ME053	HRISHIKESH DAS
7	1RV19ME064	MALIK KALANDAR MULLA
8	1RV19ME087	RITHWIK SHANKAR RAJ
9	1RV19ME095	SAMPREET DINAKAR NAYAK
10	1RV19ME115	UTKARSH GOENKA
11	1RV19ME118	VENKATANARASIMHA G HEGDE
12	1RV19ME129	CHINMAI S SHIVARU
COMPUTER SCIENCE & ENGINEERING		
SL NO	**USN**	**STUDENT NAME**

1	1RV19CS011	AKSHAY MAMMEN KOSHY
2	1RV19CS025	ARYN BARMAN
3	1RV19CS040	CHARAN M R
4	1RV19CS053	GAURAV YELLURU
5	1RV19CS151	SHRAVASTI SARKAR
6	1RV19CS152	SHRAVYA DASU
7	1RV19CS176	V A SRIRAM PRAVEEN
AEROSPACE ENGINEERING		
SL NO	**USN**	**STUDENT NAME**
1	1RV19AS011	B C LIKHITH MADHAV