No: Dean (Acad)/IAAC/2021-22/1761 Date: 24/05/2022

The minutes of the 56th meeting of the Institute Academic Advisory Committee (IAAC)

The aforesaid meeting was conducted on May 19, 2022, 4.00 pm onwards in the offline mode. The following members attended the IAAC meeting.

Sr. No.	Name	Designation
1	Dr. R. Venkata Rao	Director, ***Chairman***
2	Dr. P. L. Patel	Deputy Director
3	Dr. Pramod Mathur	Registrar
4	Dr. C.D. Modhera	Dean (Faculty Welfare)
5	Dr. P.V. Timbadiya	Dean (Alumni and Resource Generation)
6	Dr. M. A. Desai	Head, Department of Chemical Engineering
7	Dr. G. J. Joshi	Head, Department of Civil Engineering
8	Dr. R.G. Mehta	Head, Department of Computer Science and Engineering
9	Dr. A.K. Panchal	Head, Department of Electrical Engineering
10	Dr. P. N. Patel	Head, Department of Electronics Engineering
11	Dr. Jyotirmay Banerjee	Head, Department of Mechanical Engineering
12	Dr. B.Z. Dholakiya	In-charge Head, Department of Chemistry
13	Dr. Jayesh M. Dhodiya	Head, Department of Mathematics and Humanities
14	Dr. Dimple V. Shah	Head, Department of Physics
15	Dr. H. R. Jariwala	Associate Dean (Academic)
16	Dr. R. D. Shah	Associate Dean (Academic)
17	Dr. S.S. Arkatkar	Associate Dean (Planning and Development)
18	Dr. K. D. Yadav	Associate Dean (Research and Consultancy)
19	Dr. S. R. Patel	Associate Dean (Students' Welfare)
20	Dr. S. N. Sharma	Dean (Academic), ***Member-Secretary***

The following could not attend the meeting.

Sr. No.	Name	Designation
1	Dr. D.C. Jinwala	Dean (Research and Consultancy)
2	Dr. V. L. Manekar	Dean (Planning and Development)
3	Dr. Ravi Kant	Dean (Students' Welfare)
4	Dr. H.B. Mehta	Associate Dean (Research and Consultancy)
5	Dr. Y.D. Patil	Associate Dean (Planning and Development)
6	Dr. Vipul Kheraj	Associate Dean (Faculty Welfare)
Invitees		
7	Shri Amit C. Patel	In-Charge Deputy Registrar (Academic)

Items and Resolutions

Item 1		To confirm the minutes of the 55th meeting of the IAAC held on April 25, 2022.
Reso.1		confirmed.
Item 2		To consider the recommendations of DAAC, Department of Chemical Engineering.
	(1)	To consider the request of the category conversion of Behera Rashmita Simanchala (DS19CH001), working under the supervision of Dr. S. R. Patel, from the FPS to the FIR The research Scholar is GATE qualified (resolution no. 2 of the 94th meeting of the DAAC held on 22/04/2022).
	(2)	Regarding the category conversion of Ms. Kinjal Rokad (DS21CH001) from the FSF to the FPS (resolution no. 3 of the 91st meeting of the DAAC held on 21/02/2022). Ms. Kinjal Rokad (DS21CH001) was registered for the PhD programme under the supervision of Professor Jigisha K. Parikh in the December 2021 admission of the PhD programmes. The Scholar was also offered the post of JRF under Professor Jigisha K. Parikh. The Scholar is yet to complete the three-semester retention requirement for the category conversion in terms of section 11.3(d) of 'PhD academic regulations effective from July 2019'.
Res. 2		Discussed and the sub items (1)-(2) were recommended. The category conversion request of sub item (2) was recommended by giving considerations to the funding received from external sponsoring agency.
Item 3		To consider the recommendations of DAAC, Department of Civil Engineering.
	(1)	About an 'addition' of a Co-supervisor for PhD Student Ananda Mitra enrolled in the FIR category (D20CE030) (resolution no. 44.10 of the 44th meeting of the DAAC held on 29/10/2021).

Existing arrangement	Proposed arrangement
1. Dr. S.R. Suryawanshi, Associate Professor, Department of Civil Engineering SVNIT, Surat	**1.**Dr. S.R. Suryawanshi, Associate Professor, Department of Civil Engineering, SVNIT, Surat **2.**Dr. Banti A. Gedam, Scientist, CSIR-Central Building Research Institute, Roorkee.

		Currently, the FIR supervision strength of Dr. S. R. Suryawanshi is four (4) for the PhD thesis supervision. A consent letter of Dr. Banti A. Gedam is submitted with the DAAC recommendation.
	(2)	About an 'addition' of an *Administrative Supervisor* for Ph.D. Student Arpit Parikh (D17AM012) enrolled in the FIR category (resolution no. 44.11 of the 44th meeting of the DAAC held on 29/10/2021). Following the DAAC recommendation, the DAAC (Chairman) recommended Dr. A.K. Desai, Professor of Civil Engineering, as the Administrative Supervisor of the Research Scholar. The role of Professor S.R. Gandhi is the role of the external Supervisor. Currently, the FIR supervision strength of Professor Desai is four (4). The Student's request letter and consent of Professor S. R. Gandhi are submitted with the DAAC recommendation.
	(3)	To approve a new subject *Nonlinear Analysis of Frame Buildings* to M.Tech. (Structural Engineering) syllabus as an elective subject (resolution no. 45.10 of the 45th meeting of the DAAC held on 11/01/2022).
	(4)	To consider the requests of the following Students for the Ph.D. category conversion from the FIR to PEC (resolution no. 45.13 of the 45th meeting of the DAAC held on 11/01/2022).

Name of Student	Admission No.	Name of Supervisor/Co-supervisor
Ankur J. Shah	D17AM003	Dr. G.R. Vesmawala
Nishant Sourabh	DS16CE002	Dr. P.V. Timbadiya and Dr. P.L. Patel
Kaushikkumar P. Sheladiya	D20CE009	Dr. C.R. Patel

The requisite 'No Objection Certificates' from the respective Employers are submitted with the recommendation.

	(5)	A request of Mukul Anand (D21CE015), working under the supervisions of Dr. P.V. Timbadiya and Professor P. L. Patel, for the category conversion from the FIR to the FPS (resolution no. 46.14 of the 46th meeting of the DAAC held on 30/03/2022). The Scholar is yet to complete the minimum three-semester retention requirement for the category conversion in terms of section 11.3(d) of PhD academic regulations effective from July 2019. The DAAC has recommended the category conversion as a special case. Furthermore, Professor J N Patel expressed his disagreement with the above resolution in the form of 'Note of Dissent' by citing the resolution 5 of the 53rd meeting of the Senate.
	(6)	To consider the requests of the following Ph.D. Students for the PhD category conversion from the FPS (Full-time Project Staff) to the FIR (resolution no. 45.14 of the 45th meeting of the DAAC held on 11/01/2022).

Name of Student	Admission No.	Name of Supervisor/Co Supervisor
Shubhan M. Jibhakate	D18CE003	Dr. P.V. Timbadiya and Professor P.L. Patel
Lalit Kumar Gehlot	D18CE002	Professor P.L. Patel and Dr. P.V. Timbadiya
Kalpesh B. Baladaniya	D20CE012	Professor P.L. Patel and Dr. P.V. Timbadiya

Currently, the FIR supervision strength of Professor P. L. Patel is one (1) for the PhD thesis supervision and the FIR supervision strength of Dr. P.V. Timbadiya is three (3) for the PhD thesis supervision. All Students mentioned in the item (6) have GATE scores. Copies of Gate score cards are appended with their applications.

<table>
<tr><td></td><td>(7)</td><td>A request of Tejashkumar K. Patel (D16AM002), working under the supervision of Professor S. A. Vasanwala, for the category conversion from the FIR to the PEC (resolution no. 46.13 of the 46th meeting of the DAAC held on 30/03/2022).
A request letter of the research Scholar and an NOC from the Employer are submitted with the DAAC recommendation.</td></tr>
<tr><td></td><td>(8)</td><td>About an 'addition' of a Co-supervisor for PhD Student Pranat Jain (DS20CE008) enrolled in the FIR category (resolution no. 46.15 of the 46 the meeting of the DAAC held on 30/03/2022).
<table>
<tr><th>Existing arrangement</th><th>Proposed arrangement</th></tr>
<tr><td>1. Dr.K.D. Yadav
Associate Professor,
Department of Civil Engineering
SVNIT, Surat</td><td>1. Dr. K.D. Yadav
Associate Professor,
Department of Civil Engineering SVNIT, Surat
2. Dr. B.Z. Dholakia
Associate Professor,
Department of Chemistry, SVNIT, Surat</td></tr>
</table>
Currently, FIR supervision strength of Dr. K. D. Yadav is four (4) for the PhD thesis supervision and the FIR supervision strength of Dr. B.Z. Dholakia is three (3) for the PhD thesis supervision. A consent Letter of Dr. B.Z. Dholakia is submitted with the DAAC recommendation.</td></tr>
<tr><td>Res. 3</td><td></td><td>Sub items (1)-(8) were discussed and recommended.
The revised FIR supervision strength of Dr. S. R. Suryawanshi (sub item1) remains unchanged. The revised FIR supervision strengths of Dr. K. D. Yadav and Dr. B. Z. Dholakia (sub item 8) are 3.5 and 3.5 respectively.
The IAAC discussed the category conversion request of Mukul Anand (sub item 5) and recommended for the category conversion (the FIR to the FPS) by giving considerations to the funding received from external sponsoring agency.
Regarding the research Scholars associated with sub item (6), their category conversion requests were recommended and it was further resolved that the maximum total time duration of their scholarships is 'five years', including the durations of the both categories. Furthermore, the revised FIR supervision strengths of Professor P. L. Patel and Dr. P.V. Timbadiya are 1.5 and 3.5 respectively.
The IAAC further resolved that the 'future' category conversion request (FIR and FSF categories to FRS and FPS categories) would be decided upon the satisfaction of the Senate Chairman and if it is required, then it would be discussed in the IAAC meeting.</td></tr>
<tr><td>Item 4</td><td></td><td>To consider the recommendations of DAAC, Department of Electrical Engineering.</td></tr>
<tr><td></td><td>(1)</td><td>About an 'addition' of a Co-supervisor for Ph. D. Student G. Vishwas (D20EL004) enrolled in the FIR category (resolution no. 1 of the 58th meeting of the DAAC held on 07/01/2022). Application dated 10/12/2021.
<table>
<tr><th>Existing arrangement</th><th>Proposed arrangement</th></tr>
<tr><td>1.Dr. Rajasekhara Reddy Chilipi
Assistant Professor,
Department of Electrical Engineering
SVNIT, Surat</td><td>1.Dr. Rajasekhara Reddy Chilipi
Assistant Professor,
Department of Electrical Engineering, SVNIT
2.Dr. Sabharaj Arya,
Associate Professor,
Department of Electrical Engineering, SVNIT</td></tr>
</table>
Currently, the FIR supervision strength of Dr. S.R. Arya is 3.5 for the PhD thesis supervision. The FIR supervision strength of Dr. Rajasekhara Reddy Chilipi is 2 for the</td></tr>
</table>

<table>
<tr><td></td><td></td><td>PhD thesis supervision.</td></tr>
<tr><td></td><td>(2)</td><td>To discuss the title change of a subject of B.Tech. IInd year (Electrical Engineering) 4th Semester.
The DAAC recommended the renaming of Engineering Mathematics to "Numerical Methods Applications for Electrical Engineering. The subject code is EE 202 (resolution no. 4 of 58th meeting of the DAAC held on 07/01/2022).</td></tr>
<tr><td></td><td>(3)</td><td>A request of Kothavade Jayesh Uddhav (DS18EL004), working under the supervision of Dr. P. Kundu, for the category conversion from the FIR to the PEC (resolution no. 3 of 59th meeting of the DAAC held on 18/02/2022).
A request letter of the research Scholar and an NOC from the Employer are submitted with the DAAC recommendation.</td></tr>
<tr><td>Res. 4</td><td></td><td>Sub items (1)-(3) were recommended. The revised FIR supervision strengths of Dr. S.R. Arya and Dr. Rajasekhara Reddy Chilpi (sub item 1) are 4 and 1.5.
The IAAC recommended rewordings of the Course Engineering Mathematics. Thus, the revised Course title is 'Applications of Numerical Methods in Electrical Engineering' with the subject code EE 202.</td></tr>
<tr><td>Item 5</td><td></td><td>To consider the recommendations of DAAC, Department of Electronics Engineering.</td></tr>
<tr><td></td><td>(1)</td><td>A request of Kalpesh Prajapati (DS18EC001), working under the supervision of Dr. Kishore Upla, about the category conversion from the PPF (renamed as Full-time Project Staff, FPS) to the PEC (resolution no. 1 of the 64th meeting of the DAAC held on 26/10/2021).
A request letter of the research Scholar and an NOC from the Employer are submitted with the DAAC recommendation.</td></tr>
<tr><td></td><td>(2)</td><td>About an 'addition' of a Co-supervisor for Ph. D. Student Hitarth Patel (D21EC004) enrolled in the FIR category (resolution no. 5 of the 66th meeting of the DAAC held on 07/03/2022)
<table>
<tr><th>Existing arrangement</th><th>Proposed arrangement</th></tr>
<tr><td>1. Dr. Deepak Joshi,
Assistant Professor,
Department of Electronics Engineering
SVNIT, Surat</td><td>1. Dr. Deepak Joshi,
Assistant Professor,
Department of Electronics Engineering, SVNIT
2. Dr. Vivek Garg,
Assistant Professor,
Department of Electronics Engineering, SVNIT</td></tr>
</table>
Currently, the FIR supervision strength of Dr. Deepak Joshi is two (2) and the FIR supervision strength of Dr. Vivek Garg is 0.5 for the PhD thesis supervision.</td></tr>
<tr><td></td><td>(3)</td><td>About an 'addition' of a Co-supervisor for Ph. D. Student Sudhanshu Sekhar Nayak (D21EC005) enrolled in the FIR category (resolution no. 1 of the 67th meeting of the DAAC held on 27/04/2022).
<table>
<tr><th>Existing arrangement</th><th>Proposed arrangement</th></tr>
<tr><td>1. Dr. P.K. Shah,
Associate Professor,
Department of Electronics Engineering
SVNIT, Surat</td><td>1. Dr. P.K. Shah,
Associate Professor,
Department of Electronics Engineering, SVNIT
2. Dr. A.D. Darji,
Associate Professor,
Department of Electronics Engineering, SVNIT</td></tr>
</table>
Currently, the FIR supervision strength Dr. P.K. Shah is two (2) for the PhD thesis</td></tr>
</table>

		supervision and the FIR supervision strength of Dr. A.D. Darji is one (1). A consent Letter of Dr. A.D. Darjii submitted with the DAAC recommendation.
Res. 5		Sub items (1)-(3) were recommended. The 'revised' FIR supervision strengths of Dr. Deepak Joshi and Dr. Vivek Garg are 1.5 and 1 respectively. After the re-arrangement made for the joint supervision, the revised FIR supervision strengths of Dr. P K Shah and Dr. Anand Darji are 1.5 and 1.5 respectively.
Item 6		To consider the recommendations of DAAC, Department of Mechanical Engineering.
	(1)	To approve the Programme Specific Outcomes (PSOs) and the Programme Educational Objectives (PEOs) of the Under Graduate Programme (B.Tech. in Mechanical Engineering) (resolution no. 61.2 of the 61st meeting of the DAAC held on 25/02/2022).
	(2)	To approve PSOs of all five PG Programmes, proposed by Department of Mechanical Engineering (resolution no. 62.5 of the 62nd meeting of the DAAC held on 11/04/2022).
	(3)	To consider a request of Parth Shah (DS14ME004), enrolled in the FPS category and working under the supervision of Dr. R.D. Shah jointly with Retired Professor S. A. Channiwala. His thesis submission duration ends on July 11, 2022. The DAAC recommended the Pre-synopsis seminar in the Spring semester of the Academic Year 2021-22 (resolution no. 62.7.1 of the 62nd meeting of the DAAC held on 11/04/2022).
	(4)	To consider the recommendation of the DAAC for Dr. Pawan Sharma as Co-supervisor of three research Scholars of Department of Mechanical Engineering. Dr. Pawan Sharma left the Institute on 8th November 2021. Dr. Pawan Sharma is working as Assistant Professor, IIT-BHU (resolution no. 59.6 of the 59th meeting of the DAAC held on 29/10/2021).

Students' Name	Reg. No.	Supervisor	Proposed Co-supervisor
Garvit Singh (FIR)	D21ME008	Professor S. Kumar	Dr. Pawan Sharma
Harsh Soni (FIR)	D21ME005	Dr. B.N. Sahoo	Dr. Pawan Sharma
Rahul Gurpude (QIP)	D21ME019	Dr. Amrut Mulay	Dr. Pawan Sharma

Currently, the FIR scholar supervision strengths of Supervisors Professor S. Kumar, Dr. B. N. Sahoo and Dr. Dr. Amrut Mulay are 2.5, 1.0, 1.0 respectively.

Res. 6		Sub items (1)-(4) were recommended for the Senate approval. The sub item (3) was deliberated. Abiding by the seven-and-half-year duration (extended duration for the COVID reason) and giving considerations to the publication requirement met by 'research Scholar' Parth Shah (DS14ME004), the IAAC resolved to allow Parth Shah (DS14ME004) for the pre-synopsis seminar in the Spring Semester of the Academic Year 2022-23 under the special case consideration. It is required that the 'research Scholar' would complete the thesis submission requirement on or before 11th July, 2022, including pre-synopsis seminar and synopsis submission. The revised supervision strength of each internal Supervisor associated with the supervision of the respective research Scholar mentioned in sub item (4) is one. As a result of this, the revised FIR supervision strengths of Professor S. Kumar, Dr. B. N.Sahoo and Dr. Amrut Mulay are 3, 1.5 and 1 respectively.
Item 7		To consider the recommendations of DAAC, Department of Mathematics and Humanities.
	(1)	To consider a proposal to start an MBA program from the Academic Year 2024-25 in continuation to the Senate resolution No. C/Senate(10)/Reso.3 held on March 28, 2006. (Resolution no. 41.3 of the DAAC held on 10/12/2021).

	(2)	A request of Farhatbanu H. Patel (D19MA009), working under the supervision of Professor Ajaykumar Shukla, for the category conversion from the FSF to the PEC (resolution no. 41.4 of the DAAC held on 10/12/2021). A request letter of student and an NOC from the Employer are submitted with the DAAC recommendation.
Res. 7		Sub item (1) was deliberated, including its various aspects and resolved to defer the item. Sub item (2) was recommended.
Item 8		To consider the recommendations of DAAC, Department of Chemistry.
	(1)	To discuss the request of Dr. Rajender Kumar regarding the withdrawal from the Co-supervision of Anuj Saini (D18CY006, FIR category) and Seshu Vardhan (D19CY007, FRS category) (resolution no. 2 of the 98th meeting of the DAAC held on 07/01/2022). Currently, the FIR supervision strength of Dr. S.K. Sahoo is four (4) for the PhD thesis supervision.
	(2)	A request of Shraddha Borse (D18CY004)), working under the supervision of Dr. Suresh Kumar Kailasa, for the category conversion from the FPS (Full-time Project Staff) to the FSF (Full-time Self-Financed) (resolution no. 6 of the 99th meeting of the DAAC held on 02/03/2022).
	(3)	To consider the recommendation of the DAAC (Department of Chemistry) for the introduction of two Courses (Institute Electives) in the third year integrated MSc Chemistry programme. The DAAC recommended two Courses as the Institute Electives are the following. (i) Chemistry of Engineering Materials for the odd Semester (ii) Analytical Techniques for Materials Characterization for the even Semester.(Resolution no. 2 of the 100th meeting of the DAAC held on 25/03/2022).
Res. 8		Regarding sub item (1), the IAAC recommended the DAAC to assign a Co-supervisor from the Department alongwith Dr. S. K. Sahoo for supervising Research Scholar Anuj Saini (D18CY006, FIR category). The DAAC Chairman (Department of Chemistry) would formally recommend the name of the Co-supervisor for Research Scholar Anuj Saini (D18CY006, FIR category) for its onward considerations. Regarding the supervision of Seshu Varadhn (D19CY007, FRS category), Dr. S. K. Sahoo would be the sole supervisor. Sub items (2) and (3) are recommended.
Item 9		To consider the recommendations of DAAC, Department of Physics.
	(1)	About an 'addition' of a Co-supervisor for Ph. D. Student Vivek Katariya (D21PH002) enrolled in the FIR category. (Resolution no. 3 of the 35th meeting of the DAAC held on 25/02/2022)

Existing arrangement	**Proposed arrangement**
1.Dr. Dipika Patel, Assistant Professor, Department of Physics, SVNIT, Surat	1.Dr. Dipika Patel, Assistant Professor, Department of Physics, SVNIT, Surat 2.Dr. Y. K. Gupta Scientific Officer (G), Nuclear Physics Division, BARC, Mumbai

Currently, the FIR supervision strength of Dr. Dipika Patel is one (1) for the PhD thesis supervision. A consent letter of Dr. Y.K. Gupta is submitted with the DAAC recommendation.

<table>
<tr><td></td><td>(2)</td><td>A request of Zainitkumar Dhameliya (D20PH010), working under the supervision of Dr. D.R. Roy, for the category conversion from the FIR to the FRS w.e.f. 01/04/2022.
Zainitkumar Dhameliya (D20PH010) has already completed three semesters in the FIR category. The Scholar has qualified the NET for the CSIR-UGC Junior Research Fellowship (resolution no. 4 of the 35th meeting of the DAAC held on 25/02/2022).</td></tr>
<tr><td>Res. 9</td><td></td><td>Both the sub items were recommended. After the re-arrangement in the supervision, the FIR supervision strength of Dr. Dipika Patel remains unchanged.</td></tr>
<tr><td>Item 10</td><td></td><td>To consider the revised syllabus of the Research Methodology Course for the Ph.D. Programme.</td></tr>
<tr><td>Res. 10</td><td></td><td>The IAAC resolved to adopt the revised syllabus of the Research Methodology Course (GN 900, Annexure 1) for the Ph.D. Programme. It was resolved to offer the revised syllabus of the Research Methodology Course (GN 900) to all doctoral students of the Institute.</td></tr>
<tr><td>Item 11</td><td></td><td>To discuss and adopt resolutions concerning ‘the revised curricula of the existing (ongoing) M. Tech. Programmes under the Academic Departments of the Institute’ (resolution7 of the minutes of the 51st Meeting of the Senate).
Department of Chemical Engineering, Department of Electronics Engineering and Department of Computer Science and Engineering have submitted the revised schemes of the existing (ongoing) M. Tech. Programmes of their respective Departments. The Department of Computer Science and Engineering has submitted the revised syllabus as well. The details are mentioned below.
<table>
<tr><th>Sr. No.</th><th>Name of the Department</th><th>M.Tech. Specialisation</th><th>Revision in the title of specialisations</th><th>Remarks</th></tr>
<tr><td>1</td><td>Department of Chemical Engineering</td><td>Chemical Engineering</td><td>No revision</td><td>Scheme is prepared</td></tr>
<tr><td>2</td><td>Department of Electronics Engineering</td><td>Communication Systems</td><td>Communication Technologies and Networks</td><td>Scheme is prepared.</td></tr>
<tr><td>3</td><td>Department of Electronics Engineering</td><td>VLSI & Embedded Systems</td><td>Microelectronics and VLSI Design</td><td>Scheme is prepared.</td></tr>
<tr><td>4</td><td>Department of Computer Science and Engineering</td><td>Computer Science and Engineering</td><td>No revision</td><td>Scheme and Syllabus are prepared</td></tr>
</table>
The respective requisite Department-level procedures towards ‘revising’ the schemes of other existing (ongoing) M. Tech. Programmes are under progress.</td></tr>
<tr><td>Res. 11</td><td></td><td>The revised schemes of the above-mentioned specializations were recommended by the IAAC, including the syllabus of the specialization Computer Science and Engineering. Annexure 2</td></tr>
</table>

<table>
<tr><td>Item 12</td><td></td><td>To discuss and adopt resolutions for new M. Tech. Programmes.
Department of Computer Science and Engineering has submitted schemes and syllabi of two new M. Tech. Programmes and Department of Mechanical Engineering has submitted scheme and syllabus of a new M. Tech. programme. The details are mentioned below.
<table>
<tr><th>Sr. No.</th><th>Name of the Department</th><th>M.Tech. Specialisation</th><th>Remarks</th></tr>
<tr><td>1</td><td rowspan="2">Computer Science and Engineering</td><td>Computer Science and Engineering with Specialisation in Data Science</td><td>Scheme and Syllabus are prepared</td></tr>
<tr><td>2</td><td>Computer Science and Engineering with Specialisation in Information Security and Privacy</td><td>Scheme and Syllabus are prepared</td></tr>
<tr><td>3</td><td>Mechanical Engineering</td><td>Mechanical Engineering with specialization in Machine Design</td><td>Scheme and Syllabus are prepared.</td></tr>
</table>
</td></tr>
<tr><td>Res. 12</td><td></td><td>Proposals to start new M. Tech. programmes with specializations in Data Science, Information Security and Privacy and Machine Design were recommended to the Senate. Annexure 3</td></tr>
</table>

24.05.2022

Member-Secretary, IAAC

Director

24.05.22

ANNEXURE-I

Institute Elective Course

Research Methodology (GN 900)

L	T	P	C
4	0	0	4

- **Introduction:** Meaning of research; Types of research, Steps involved in research process; Criteria of good research; Research methods versus-methodology; Problems encountered by researchers; Ethics in research, importance of ethics, research misconducts, codes and policies for research ethics, Introduction to Intellectual Property Rights (IPR). **(6 Hours)**
- **Research Problem and Research Design**: Selecting the research problem; Steps involved in defining a research problem (with illustrations); Need for research design; Types of research designs; Basic principles of experimental designs; Informal and formal experimental designs; Taguchi's design of experiments. **(8 Hours)**
- **Sampling Design and Sampling Fundamentals:** Need for sampling; Steps in sampling design; Different types of sample designs; Complex random sampling designs; Important sampling distributions (of mean, proportion, t-, F-, and Chi-square distribution), Central limit theorem; Concept of standard error; Estimating population mean and proportion; Determination of sample size through confidence level; probability estimation and probability distributions **(7 Hours)**
- **Measurement and Scaling Techniques**: Measurement scales, Sources of error; Tests of measurement (for validity, reliability and practicality); Scaling; Important scaling techniques; Scale construction techniques; Fuzzy scales developments. **(6 Hours)**
- **Data Collection Methods, Processing and Analysis of Data:** Methods for collection of primary and secondary data; Selection of appropriate data collection method; Collection of data through questionnaires and schedules; Design of questionnaires; Other methods of data collection; Data processing operations; Statistics in research; Measures of central tendency; dispersion, asymmetry; Measures of relationship: Bivariate population-Spearman's and Pearson's coefficients of correlation, simple regression analysis; Multivariate population-coefficient of multiple correlation, multiple regression analysis (with examples); Analysis of Variance (ANOVA)- setting up ANOVA table; one-way and two-way ANOVA; Important methods of factor analysis (centroid method, principal components method, maximum likelihood method), Panel data analysis, Time series analysis and applications, Simulation-based experiments, Reliability analysis and applications. **(13 Hours)**

25/5/22

- **Testing of Hypotheses-I and II:** Basic concepts concerning testing of hypotheses; Important parametric tests (z, t, F, and Chi-square tests); Hypothesis testing of means, for differences between means, for comparing two related samples, of proportions, for difference between proportions, for comparing a variance to some hypothesized population variance; Hypothesis testing of correlation coefficients; Important nonparametric or distribution-free tests (sign test, Wilcoxon test, rank-sum test, Kendall's coefficient, etc.). **(8 Hours)**
- **Statistical Software**: Brief introduction to different commercially available software packages; such as Minitab, SPSS, M S Excel, and R language. **(4 Hours)**
- **Interpretation of Results, Report Writing and Presentation:** Meaning of interpretation of results; Steps of interpretation; Significance of report writing; Types of reports; Use of Mendeley for literature review, Different steps in report writing; Structure of the research report; Precautions for writing research reports; Oral presentation. **(4 Hours)**

Total contact hours = 56

Books Recommended:

1. C. R. Kothari and G. Garg. Research Methodology: Methods and Techniques, 4th Edition, New Age International, 2019.
2. R. A Johnson. Probability and Statistics for Engineers, 9th edition, Pearson Education Limited, UK, 2018.
3. R. Pannerselvam. Research Methodology, 2nd Edition, PHI Learning, 2014.
4. N. Walliman. Research Methods: The Basics, Routledge, 2011.
5. D. Napolean and B. B. S. Narayanan. Research Methodology – As Theoretical Approach, Laxmi Publications, 2014.
6. H. S. Asthana and B. Bhushan. Statistics for Social Sciences (With SPSS Applications), 2nd Edition, PHI Learning, 2016.

2.5.22

Annexure 2

Outward No. 236
Date 24/05/22
Dept. of Chem. Engg.

TEACHING SCHEME OF M. TECH. (Chemical Engineering)

M.TECH. I (SEMESTER I & II)

SEMESTER –I

Sr. No.	Course	Code	Credits	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1	Optimization Techniques (Core - 1)	CH601	4	3	1	0	100	25	---	125
2	Advanced Chemical Engineering Thermodynamics (Core - 2)	CH603	4	3	1	0	100	25	---	125
3	Advanced Transport Phenomena (Core - 3)	CH605	4	3	1	0	100	25	---	125
4	Core Elective - 1	CH6XX	3	3	0	0	100	---	---	100
5	Core Elective - 2	CH6YY	3	3	0	0	100	---	---	100
6	Modelling/ Simulation/ Software Tools Laboratory – 1	CH607	2	0	0	4	---	---	100	100
7	Laboratory Practice - 1	CH609	2	0	0	4	---	---	100	100
	TOTAL		22	15	3	8	500	75	200	775
Total contact hours per week = 26										

Core Elective – 1 (CH6XX)		
Sr. No	**Code**	**Elective Course**
1.	CH631	Nanotechnology
2.	CH633	Smart Polymers
3.	CH635	Nanomaterial Synthesis and Applications
4.	CH637	Interfacial Science and Engineering

Core Elective – 2 (CH6YY)		
Sr. No	**Code**	**Elective Course**
1.	CH639	Polymer Engineering
2.	CH641	Process Intensification
3.	CH643	Multiphase Reactor

24/5/2022
Head,
Department of Chemical Engineering

Amita Gupta
24/05/2022

SEMESTER – II

Sr. No.	Course	Code	Credits	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1	Advanced Chemical Reaction Engineering (Core – 4)	CH602	4	3	1	0	100	25	---	125
2	Advanced Separation Methods (Core – 5)	CH604	4	3	1	0	100	25	---	125
3	Core Elective - 3	CH6XX	3	3	0	0	100	---	---	100
4	Core Elective - 4	CH6YY	3	3	0	0	100	---	---	100
5	Institute Elective - 1	CH6ZZ	3	3	0	0	100	---	---	100
6	Modelling/ Simulation/ Software Tools Laboratory – 2	CH606	2	0	0	4	---	---	100	100
7	Laboratory Practice - 2	CH608	2	0	0	4	---	---	100	100
8	Seminar	CH610	2	0	0	4	---	---	100	100
	TOTAL		23	15	2	12	500	50	300	850
Total contact hours per week = 29										

Core Elective – 3 (CH6XX)		
Sr. No	**Code**	**Elective Course**
1.	CH632	Rheology of Complex Fluid
2.	CH634	Industrial Biotechnology
3.	CH636	Environment, Health and Safety
4.	CH638	Computational Fluid Dynamics

Core Elective – 4 (CH6YY)		
Sr. No	**Code**	**Elective Course**
1.	CH640	Design of Experiments
2.	CH642	Advanced Process Control
3.	CH644	Catalyst Science and Technology
	CH646	Sustainable Development Goals

Institute Elective – 1 (CH6ZZ)		
Sr. No	**Code**	**Elective Course**
1.	CH662	Corrosion Engineering
2.	CH664	Nonconventional Energy
3.	CH666	Environment Management System

Dean, M.A. 24/5/2022

Head,
Department of Chemical Engineering

Sunita Gupta 24/05/2022

M.TECH. II (SEMESTER –III & IV)

SEMESTER –III

Sr. No.	Course	Code	Credits	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1	Dissertation Preliminaries	CH801	10	0	0	20	---	---	300	300
		TOTAL	10	0	0	20	---	---	300	300

SEMESTER –IV

Sr. No.	Course	Code	Credits	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1	Dissertation	CH802	12	0	0	24	---	---	400	400
		TOTAL	12	0	0	24	---	---	400	400

Total Credits: 67

Dean M.T.
24/5/2022

Head,
Department of Chemical Engineering

24/05/2022

Annexure-2

DEPARTMENT OF ELECTRONICS ENGINEERING
SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY
Surat- 395007

Nomenclature & Scheme of M. Tech. Communication Systems with revised name as M. TECH. In Communication Technologies & Networks

Course Structure and Scheme of Evaluation (Semester wise)

SEMESTER-I

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC601	Wide Sense Stationary Processes	3	0	0	03	100	-	-	100
2	EC603	Advance Digital Communication	3	0	0	03	100	-	-	100
3	EC605	Fiber Optic Communication & Networks	3	0	0	03	100	-	-	100
4	EC6XX	Elective-I	3	0	0	03	100	-	-	100
5	EC6XX	Elective-II	3	0	0	03	100	-	-	100
6	EC607	Laboratory Practice-I	0	0	4	02		-	100	100
7	EC609	Laboratory Practice-II	0	0	4	02		-	100	100
8	EC621	Foundation for Research and Technical Writing	1	0	0	P/N	50	-	-	50
		Total	**16**	**0**	**08**	**19**	**550**	**-**	**200**	**750**

List of Subjects for Elective I and II

Sr. No.	Subject	Course Code
1.	Cognitive Radio	EC631
2.	Antenna Theory and Design	EC633
3.	Digital Satellite Communication	EC635
4.	Internet Of Things: From Technology To Applications	EC637
5.	Advanced Embedded Systems	EC639
6.	Introduction to Machine Learning	EC641
7.	Linear Algebra	EC643
8.	Information Theory & Coding	EC645
9.	Advance Digital Signal Processing	EC647
10.	Convex Optimization	EC649
11.	Python Programming	EC651
12.	Image Processing	EC653

SEMESTER-II

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC602	Wireless Technologies	3	0	0	03	100	-	-	100
2	EC604	RF & Microwave Technology	3	0	0	03	100	-	-	100
3	EC6XX	Elective-III	3	0	0	03	100	-	-	100
4	EC6XX	Elective-IV	3	0	0	03	100	-	-	100
5	EC6XX	Elective-V	3	0	0	03	100	-	-	100
7	EC606	Laboratory Practice-III	0	0	4	02	-	-	100	100
8	EC608	Laboratory Practice-IV	0	0	4	02	-	-	100	100
9	EC610	Seminar	0	0	4	02	-	-	100	100
		Total	**15**	**0**	**12**	**21**	**500**	**-**	**300**	**800**

List of Subjects for Elective - III, IV & V

Sr. No.	Subject	Course Code
1.	Software Defined Networking	EC632
2.	Mobile Ad-Hoc Networks	EC634
3.	Mobile Computing	EC636
4.	Microwave Integrated Circuits	EC638
5.	MIMO Technology	EC640
6.	Communication System Design	EC642
7.	Optical Networks	EC644
8.	Advance Global Navigation Satellite System	EC646
9.	Radar Systems	EC648
10.	Estimation Theory	EC650
11.	Deep Learning Theory and Practice	EC652
12.	Photonic Integrated Devices and Systems	EC654
13.	Visible Light Communication	EC656
14.	EM Interference and Compatibility	EC658
15.	Wireless Sensor Network	EC660

SEMESTER-III

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC801	Dissertation Phase I	0	0	24	12	-	-	400	400
		Total	**0**	**0**	**24**	**12**	**-**	**-**	**400**	**400**

SEMESTER-IV

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC802	Dissertation Phase II	0	0	24	12	-	-	400	400
		Total	**0**	**0**	**24**	**12**	**-**	**-**	**400**	**400**

Total Credits = 19+21+12+12 = 64 Credits

Range: 62 - 68 Credits

Head
Department of Electronics Engineering

DEPARTMENT OF ELECTRONICS ENGINEERING
SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY
Surat- 395007

Nomenclature & Scheme of M. Tech.

VLSI & Embedded Systems with revised name

as

M. TECH.

In

Microelectronics & VLSI Design

M. Tech. Programme in MICROELECTRONICS AND VLSI DESIGN
Course Structure and Scheme of Evaluation (Semester wise)

SEMESTER-I

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC 611	Physics of Semiconductor Devices	3	0	0	03	100	-	-	100
2	EC 613	Advanced Digital VLSI Design	3	0	0	03	100	-	-	100
3	EC 615	Simulation of Circuits and Devices	3	0	0	03	100	-	-	100
4	EC 6XX	Elective-I	3	0	0	03	100	-	-	100
5	EC 6XX	Elective-II	3	0	0	03	100	-	-	100
6	EC 617	Laboratory Practice - I	0	0	4	02	-	-	100	100
7	EC 619	Laboratory Practice - II	0	0	4	02	-	-	100	100
9	EC 621	Foundation for Research and Technical Writing	1	0	0	P/N	50	-	-	50
		Total	**16**	**0**	**08**	**19**	**550**	**-**	**200**	**750**

List of Subjects for Elective I and II

Sr. No.	Subject	Course Code
1.	Foundation of VLSI CAD	EC 655
2.	Modeling of MOS Transistors	EC 657
3.	Reliability of Electronic Devices	EC 659
4.	Advanced Processor Architecture	EC 661
5.	Advanced Embedded Systems	EC 639
6.	Advance Digital Signal Processing	EC 647
7.	Internet of Things: From Technology to Applications	EC 637
8.	Linear Algebra	EC 643
9.	Information Theory and Coding	EC 645
10.	Smart Sensors Systems	EC 663

SEMESTER-II

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC 612	CMOS Analog VLSI Design	3	0	0	03	100	-	-	100
2	EC 614	Advanced Fabrication Technology	3	0	0	03	100	-	-	100
3	EC 6XX	Elective- III	3	0	0	03	100	-	-	100
4	EC 6XX	Elective- IV	3	0	0	03	100	-	-	100
5	EC 6XX	Elective- V	3	0	0	03	100	-	-	100
6	EC 616	Laboratory Practice -III	0	0	4	02	-	-	100	100
7	EC 618	Laboratory Practice -IV	0	0	4	02	-	-	100	100
9	EC 620	Seminar	0	0	4	02	-	-	100	100
		Total	**15**	**0**	**12**	**21**	**500**	**-**	**300**	**800**

List of Subjects for Elective III and IV

Sr. No.	Subject	Course Code
1.	Nano electronics	EC 662
2.	MEMS Technology	EC 664
3.	Nanoscale Devices	EC 666
4.	Solar Photovoltaics	EC 668
5.	VLSI System Design	EC 670
6.	Low Power VLSI Design	EC 672
7.	Testing and Verification of VLSI Circuits	EC 674
8.	VLSI Signal Processing	EC 676
9.	RF IC Design	EC 678
10.	Mixed Signal VLSI Design	EC 680
11.	High Speed Interconnect	EC 682
12.	Photonic Integrated Devices and Systems	EC 654
13.	Microwave Integrated Circuits	EC 638
14.	Swayam Course	SWM XXX

SEMESTER-III

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC 805	Dissertation Phase I	0	0	24	12	-	-	400	400
		Total	**0**	**0**	**24**	**12**	**-**	**-**	**400**	**400**

SEMESTER-IV

Sr. No	Course Code	Name of Subject	L	T	P	Credits	Examination Scheme			
			Hrs	Hrs	Hrs		Theory Marks	Tutorial Marks	Practical Marks	Total Marks
1	EC 804	Dissertation Phase II	0	0	24	12	-	-	400	400
		Total	**0**	**0**	**24**	**12**	**-**	**-**	**400**	**400**

Total Credits = 19+21+12+12 = 64 Credits

Range: 62 - 68 Credits

Head
Department of Electronics Engineering

ANNEXURE-2

M. Tech.

Computer Science and Engineering

(CSE)

At end of the programme graduation, the students of the program will have:

PSO1: ability to apply advanced engineering knowledge of computer science & engineering and design skill with analytical mind set for solving the real problems through research and development for catering the need of industry.

PSO2: ability to investigate innovative, sustainable and environmental adaptive solution for the society to meet the desired need using standard engineering practice.

M. Tech. Computer Science and Engineering (CSE)

Semester I

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Core-1Mathematical Foundations of Computer Science	CSE601	4	3	1	0	100	25	0	125
2.	Core-2 Design and Analysis of Algorithms	CSE603	4	3	0	2	100	0	50	150
3.	Core-3 Machine Learning	CSE605	4	3	0	2	100	0	50	150
4.	Core-4 Principles of Information Security and Privacy	CSE607	4	3	0	2	100	0	50	150
5.	Core Elective-1	CSEXXX	4	3	0	2	100	0	50	150
6.	Research Methodology in CSE	CSE609	4	4	0	0	100	0	00	100
	Total		**24**	**19**	**1**	**8**	**600**	**25**	**200**	**825**
	Total Contact Hours per week			**28**						

Semester II

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
2.	Core-5 Wireless Network and Mobile Computing	CSE602	4	3	0	2	100	0	50	150
3.	Core-6 Distributed Systems	CSE604	4	3	0	2	100	0	50	150
4.	Core Elective-2	CSEXXX	4	3	0	2	100	0	50	150
5.	Core Elective-3	CSEXXX	4	3	0	2	100	0	50	150
6.	Core Elective-4	CSEXXX	4	3	0	2	100	0	50	150
6.	Institute Elective	CSEXXX	4	3	0	2	100	0	50	150
	Total		**24**	**18**	**0**	**12**	**600**	**0**	**300**	**900**
	Total Contact Hours per week			**30**						

Semester III

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Dissertation Preliminaries#	CSE701	8	0	0	16	0	0	250	250
	Total		**8**	**0**	**0**	**16**	**0**	**0**	**250**	**250**
	Total Contact Hours per week			**16**						

 # Internal-100, External-150

Semester IV

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Dissertation#	CSE700	12	0	0	24	0	0	400	400
	Total		**12**	**0**	**0**	**24**	**160**	**240**	**400**	**400**
	Total Contact Hours per week			**24**						
# Internal-160, External-240										

Head,
Department of Computer Science
and Engineering

ANNEXURE-3

M. Tech.

Computer Science and Engineering

(CSE)

with Specialization in

Data Science

At end of the programme graduation, the students of the program will have:

PSO1: ability to apply advanced engineering knowledge of computer science & engineering and design skill with analytical mind set for solving the real problems through research and development for catering the need of industry.

PSO2: ability to investigate innovative, sustainable and environmental adaptive solution for the society to meet the desired need using standard engineering practice.

M. Tech. - I Computer Science and Engineering (CSE) with Specialization in Data Science

Semester I

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Core-1 Mathematical Foundations of Computer Science	CSEDS601	4	3	1	0	100	25	0	125
2.	Core-2 Design and Analysis of Algorithms	CSEDS603	4	3	0	2	100	0	50	150
3.	Core-3 Machine Learning	CSEDS605	4	3	0	2	100	0	50	150
4.	Core-4 Foundations of Data Science	CSEDS607	4	3	0	2	100	0	50	150
5.	Core Elective-1	CSEDSXXX	4	3	0	2	100	0	50	150
6.	Research Methodology in CSE	CSEDS609	4	4	0	0	100	0	0	100
	Total		**23**	**19**	**1**	**8**	**600**	**25**	**200**	**825**
	Total Contact Hours per week			**28**						

Semester II

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Core-5 Advanced Statistical Techniques	CSEDS602	4	3	1	0	100	25	0	125
2.	Core-6 Scalable Systems for Data Science	CSEDS604	4	3	0	2	100	0	50	150
3.	Core Elective-2	CSEDSXXX	4	3	0	2	100	0	50	150
4.	Core Elective-3	CSEDSXXX	4	3	0	2	100	0	50	150
5.	Core Elective-4	CSEDSXXX	4	3	0	2	100	0	50	150
6.	Institute Elective	CSEDSXXX	4	3	0	2	100	0	50	150
	Total		**24**	**18**	**1**	**10**	**600**	**25**	**250**	**875**
	Total Contact Hours per week			**29**						

Semester III

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Dissertation Preliminaries#	CSEDS701	8	0	0	16	0	0	250	250
	Total		**8**	**0**	**0**	**16**	**0**	**0**	**250**	**250**
	Total Contact Hours per week			**16**						

 # Internal-100, External-150

Semester IV

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Dissertation#	CSEDS700	12	0	0	24	0	0	400	400
	Total		**12**	**0**	**0**	**24**	**0**	**0**	**400**	**400**
	Total Contact Hours per week			**24**						

 # Internal-160, External-240

Head,
Department of Computer Science
and Engineering

Core Elective 1	
CSEDS611	Information Retrieval
CSEDS613	Advanced Database Management Systems
CSEDS615	Embedded Systems Design
CSEDS617	Computer Vision and Image Processing
CSEDS619	Speech and Audio Processing
CSEDS621	High Performance Computing
Core Elective 2, Core Elective 3, and Core Elective 4	
CSEDS606	Artificial Intelligence
CSEDS608	Data Mining and Data Warehousing
CSEDS610	Natural Language Processing
CSEDS612	Data Science for Software Engineering
CSEDS614	Big Data Analytics and Large-Scale Computing
CSEDS616	Cyber Physical Systems
CSEDS618	Machine Learning for Security
Institute Elective	
CSEDS620	Business Data Analytics
CSEDS622	Social Networks
CSEDS624	Cyber Laws

M. Tech. – I Semester – I	L	T	P	C
CSEDS601: MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (CORE-1)	3	1	0	4

Course Objective	
1	To learn the fundamental concepts of set theory, functions, probability.
2	To enable the students to apply the knowledge of probability in data science applications.
3	To learn different statistical inference procedures, probability distributions and random processes.
4	To enable the student to apply the knowledge of linear algebra and statistical analysis in different fields of data science.
5	To design an efficient solution using linear algebra and statistical methods for real time problems.

INTRODUCTION	**(06 Hours)**
Set Theory, Logic and Proofs, Conditional Propositions, Logical Equivalence, Predicates, Quantifiers, Combinatorics.	
FUNCTIONS AND RELATIONS	**(06 Hours)**
Types of Functions, Recursive Functions, Computable and non-computable Functions, Representations of Relations, Composition and Properties of Relations.	
PROBABILITY AND RANDOM VARIABLES	**(10 Hours)**
Overview of Sample Points and Sample Spaces, Events, Bayes Theorem, Probability Axioms, Joint and Conditional Probability, Random Variables, Discrete and Continuous Random Variables, Random Vectors, Transformation of Continuous Random Variables and Vectors by Deterministic Functions, Density Functions of Transformed Continuous Random Variables and Vectors, Multivariate Random Variables, Moments and Moment Generating Functions, Functions of Random Variables.	
RANDOM PROCESSES	**(10 Hours)**
Random Variable vs. Random Process, Bernoulli Random Process, Binomial Process, Statistical Averages, Ensemble and Time Averages, Weak and Strict Sense Stationarity of a Random Process, Ergodicity, Autocorrelation and Auto Covariance Functions of Random Processes and its Relation to Spectra, Poisson Process, Gaussian Process, Martingale Model and Markov Chains.	
ESTIMATION AND STATISTICAL ANALYSIS	**(10 Hours)**
Estimation of Parameters from Data, Maximum Likelihood Estimation, Maximum a Posterior Estimation, Consistency and Efficiency of Estimators, Stochastic State Estimation and MSE of an Estimator, Estimation of Gaussian Random Vectors, Linear Minimum Mean Square Error Estimation, Hypothesis Testing, Significance	

ANNEXURE-3

M. Tech.

Computer Science and Engineering

(CSE)

with Specialization in

Information Security and Privacy

At end of the programme graduation, the students of the program will have:

PSO1: ability to apply advanced engineering knowledge of computer science & engineering and design skill with analytical mind set for solving the real problems through research and development for catering the need of industry.

PSO2: ability to investigate innovative, sustainable and environmental adaptive solution for the society to meet the desired need using standard engineering practice.

M. Tech. Computer Science and Engineering (CSE) with Specialization in Information Security and Privacy

Semester I

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Core-1 Mathematical Foundations of Computer Science	CSEIS601	4	3	1	0	100	25	0	125
2.	Core-2 Design and Analysis of Algorithms	CSEIS603	4	3	0	2	100	0	50	150
3.	Core-3 Principles of Information Security and Privacy	CSEIS605	4	3	0	2	100	0	50	150
4.	Core-4 Modern Cryptography	CSEIS607	4	3	1	0	100	25	0	125
5.	Research Methodology in CSE	CSEIS609	4	4	0	0	100	0	0	100
6.	Core Elective-1	CSEISXXX	4	3	0	2	100	0	50	150
	Total		**24**	**19**	**2**	**6**	**600**	**50**	**150**	**800**
	Total Contact Hours per Week		**27**							

Semester II

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Core-5 Information Theory and Coding	CSEIS602	4	3	1	0	100	25	0	125
2.	Core-6 Network Security	CSEIS604	4	3	0	2	100	0	50	150
3.	Core Elective-2	CSEISXXX	4	3	0	2	100	0	50	150
4.	Core Elective-3	CSEISXXX	4	3	0	2	100	0	50	150
5.	Core Elective-4	CSEISXXX	4	3	0	2	100	0	50	150
6.	Institute Elective–1	CSEISXXX	4	3	0	2	100	0	50	150
	Total		**24**	**18**	**1**	**10**	**600**	**25**	**250**	**875**
	Total Contact Hours per Week		**29**							

Semester III

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Dissertation Preliminaries#	CSEIS701	8	0	0	16	0	0	250	250
	Total		**8**	**0**	**0**	**16**	**100**	**0**	**250**	**250**
	Total Contact Hours per week			**16**						

 # Internal-100, External-150

Semester IV

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1.	Dissertation#	CSEIS700	12	0	0	24	0	0	400	400
	Total		**12**	**0**	**0**	**24**	**0**	**0**	**400**	**400**
	Total Contact Hours per week		**24**							

 # Internal-160, External-240

Rupa C. Mehta

Head,
Department of Computer Science
and Engineering

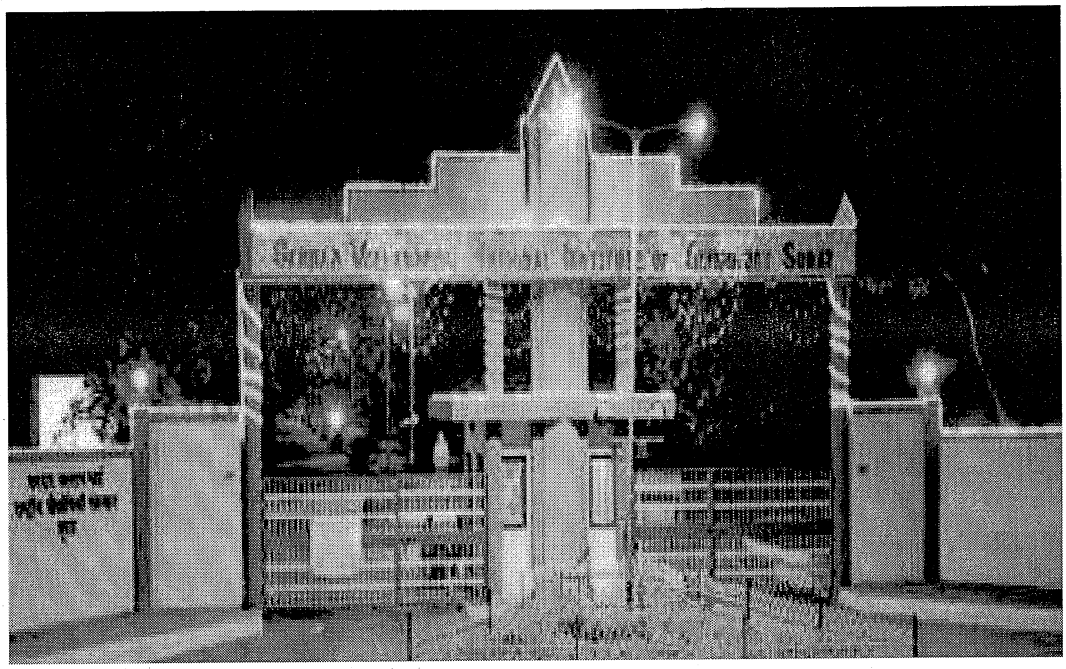
Code	Subject Name
CSEIS601	Core-1 Mathematical Foundations of Computer Science(syllabus link)
CSEIS603	Core-2 Design and Analysis of Algorithms(syllabus link)
CSEIS605	Core-3 Principles of Information Security and Privacy(syllabus link)
CSEIS607	Core-4 Modern Cryptography (syllabus link)
CSEIS609	Research Methodology in CSE
CSEIS602	Core-5 Information Theory and Coding (syllabus link)
CSEIS604	Core-6 Network Security(syllabus link)
Core Elective 1 to 4	
CSEIS611	Cloud Computing and Big Data Analytics(syllabus link)
CSEIS613	Machine Learning (syllabus link)
CSEIS615	Cyber Physical Systems (syllabus link)
CSEIS617	Digital Forensics (syllabus link)
CSEIS619	Social Networks (syllabus link)
CSEIS621	Defensible Security Architectures (syllabus link)
CSEIS606	Machine Learning for Security(syllabus link)
CSEIS608	Information Security Risks and Management(syllabus link)
CSEIS612	Mobile Forensics and Security(syllabus link)
CSEIS614	Software Security(syllabus link)
CSEIS616	Security in the Resource Constrained Environments(syllabus link)
CSEIS618	Security and Privacy in Social Networks(syllabus link)
CSEIS624	Blockchain Fundamentals and Use Cases(syllabus link)
CSEIS626	Adversarial Machine Learning(syllabus link)
CSEIS628	Cyber Laws(syllabus link)
CSEIS632	Mobile Security and Penetration Testing(syllabus link)
CSEIS634	Secure Software Engineering(syllabus link)
CSEIS636	Foundations of Privacy Engineering(syllabus link)
CSEIS638	Bitcoin and Cryptocurrency Technologies(syllabus link)
CSEIS642	Advanced Cryptography(syllabus link)
CSEIS644	Security Protocols(syllabus link)
CSEIS646	Hardware Security(syllabus link)

Institute Elective 1	
CSEIS692	Ethical Hacking and Penetration Testing(syllabus link)

ANNEXURE-3

DEPARTMENT OF MECHANICAL ENGINEERING

M. Tech. (Machine Design)



SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY
Ichchhanath, Dumas Road,
Surat- 395007, Gujarat, India

Vision and Mission of Institute

Vision Statement

To be one of the leading technical institutes disseminating globally acceptable education, effective industrial training and relevant research output.

Mission Statement

To be a globally accepted center of excellence in technical education catalyzing absorption, innovation, diffusion and transfer of high technologies resulting in enhanced quality for all the stakeholders.

Vision and Mission of Department

Vision Statement

Perceive to be a globally accepted centre of quality technical education based on innovation and academic excellence.

Mission Statement

Strives to disseminate technical knowledge to its undergraduate, post graduate and research scholars to meet intellectual, ethical and career challenges for sustainable growth of humanity, nation and global community.

Program Educational Objectives (PEOs)

Postgraduate program in Machine Design plays a vital role in the field of Mechanical Engineering discipline from the fundamentals to applications in industrial practices. The importance of this program is in understanding, design, development and implementation of mechanical systems.

PEO1: Knowledge: Impart broad technical knowledge in mechanical engineering discipline with research attitude, problem solving techniques and hands-on skill.

PEO2: Career: Provide successful career with professional ethics and responsibilities as a leading or participating role in mechanical engineering, R & D organization, academia and other fields or to pursue higher studies.

PEO3: Learning: Understand the concepts and design of machine components, analyze and simulate mechanical components and systems.

Proposed M. Tech. Machine Design
Program Structure

Semester I

C- Core, CE - Core Elective, **L-Theory, T-Tutorial, P-Practical**

Sr. No.	Course Title	Code	Credit	Teaching Scheme	Examination Scheme			Total
				L-T-P	L	T	P	
1	C-1 Advanced Machine Design	ME XXX	4	4-0-0	100	0	0	100
2	C-2 Lubrication and Rotor Dynamics	ME XXX	4	4-0-0	100	0	0	100
3	C-3 Advanced Mechanical Vibrations	ME XXX	4	3-1-0	100	25	0	125
4	CE -1	ME XXX	3	3-0-0	100	0	0	100
5	CE -2	ME XXX	3	3-0-0	100	0	0	100
6	Laboratory Practice	ME XXX	2	0-0-4	00	0	100	100
7	Software Practice-1		2	0-0-4	00	0	100	100
	Total		**22**	18-0-8	500	25	200	725
	Total Contact Hours per week			**26**				

Core Electives -1	1. Advanced Computational Methods 2. Experimental Stress Analysis 3. Industrial Robotics 4. Biomechanics 5. Dynamics of Mechanical Systems
Core Electives -2	1. Analytical Dynamics 2. Geometric Modelling & Simulation 3. Fracture Mechanics 4. Optimization Techniques 5. Computer Aided Machine Design

Semester II

C- Core, CE - Core Elective, **L-Theory, T-Tutorial, P-Practical**

Sr. No.	Course	Code	Credit	Teaching Scheme	Examination Scheme			Total
				L-T-P	L	T	P	
1	C-4 Finite Element Methods	ME XXX	4	4-0-0	100	0	0	100
2	C-5 Advanced Mechanics of Solids	ME XXX	4	3-1-0	100	25	0	125
3	CE-3	ME XXX	3	3-0-0	100	0	0	100
4	CE-4	ME XXX	3	3-0-0	100	0	0	100
5	Institute Elective	ME XXX	3	3-0-0	100	0	0	100
6	Project Lab	ME XXX	2	0-0-4	0	0	100	100
7	Software Practice-2	ME XXX	2	0-0-4	0	0	100	100
	Total		**21**	17-0-8	500	25	200	725
	Total contact hours per week			**25**				

Core Electives -3	1. Design of Pressure Vessels 2. Vehicle Dynamics 3. Advanced Mechanisms Design 4. Design and Analysis of Machine Tools 5. Computer Aided Analysis of Mechanical Systems
Core Electives -4	1. Tribology in Machine Design 2. Mechanics of Composites 3. Quality Engineering and Management 4. Automatic Control Systems 5. Smart Materials, Structures and Devices
Institute Electives	1. Mechatronics 2. Product Design & Development 3. Artificial Intelligence 4. Data Analytics

PROPOSED List of Elective Courses			
Stream-Specific Elective Courses			
Sr. No.	**Code**	**Title of Course**	**Credit**
1.	ME XXX	Advanced Computational Methods	3
2.	ME XXX	Experimental Stress Analysis	3
3.	ME XXX	Industrial Robotics	3
4.	ME XXX	Biomechanics	3
5.	ME XXX	Dynamics of Mechanical Systems	3
6.	ME XXX	Analytical Dynamics	3
7.	ME XXX	Geometric Modelling & Simulation	3
8.	ME XXX	Fracture Mechanics	3
9.	ME XXX	Optimization Techniques	3
10.	ME XXX	Computer Aided Machine Design	3
11.	ME XXX	Design of Pressure Vessels	3
12.	ME XXX	Vehicle Dynamics	3
13.	ME XXX	Advanced Mechanisms Design	3
14.	ME XXX	Design and Analysis of Machine Tools	3
15.	ME XXX	Computer Aided Analysis of Mechanical Systems	3
16.	ME XXX	Tribology in Machine Design	3
17.	ME XXX	Mechanics of Composites	3
18.	ME XXX	Quality Engineering and Management	3
19.	ME XXX	Automatic Control Systems	3
20.	ME XXX	Smart Materials, Structures and Devices	3
Note: Students can opt any 03 choices in Semester-I & II.			
Institute Electives			
Sr. No.	**Code**	**Title of Course**	**Credit**
1.	ME XXX	Mechatronics	3
2.	ME XXX	Product Design & Development	3
3.	ME XXX	Artificial Intelligence	3
4.	ME XXX	Data Analytics	3

Semester III

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1	Dissertation Preliminaries	ME XXX	8	0	0	16	0	0	400	400
2	Seminar	ME XXX	2	0	0	4	0	0	100	100
	Total		10	0	0	20	0	0	500	500
	Total contact hours per week			20						

Semester IV

Sr. No.	Course	Code	Credit	Teaching Scheme			Examination Scheme			Total
				L	T	P	L	T	P	
1	Dissertation	ME XXX	12	0	0	24	0	0	600	600