Enclosure II

SHRI MANIBHAI VIRANI & SMT. NAVALBEN VIRANI SCIENCE COLLEGE (AUTONOMOUS), RAJKOT

DEPARTMENT OF INDUSTRIAL CHEMISTRY

B. SC. INDUSTRIAL CHEMISTRY

VISION:

Empowering graduates to become leading future technocrats with innovation, research and spirituality having a solid foundation of pure sciences in conjunction with applied sciences to serve the global needs.

MISSION:

IC dept is passionate and committed to:

- To divulge the students the contemporary state of knowledge and to imbibe ethos of technocrat in rapidly emergent field of science & technology by building the foundation on fundamental sciences.
- Provide outstanding undergraduate and graduate Industrial chemistry degree programs with excellent technical and leadership skills, integrity, and social responsibility.
- Be recognized internationally as a leader in research and industrial science, creating novel and sustainable solutions to serve public interests and to address global challenges in areas such as health, energy, and environment.
- Provide rigorous and contemporary curriculum that is responsive to future developments, reflecting the interdisciplinary nature and diversity of the industrial need, thus enabling students to become successful industrialist, entrepreneurs, academicians and leaders.

OBJECTIVES OF THE PROGRAM

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

- To uphold the values embodied in the institute's vision and mission.
- To imparting knowledge of both pure science and engineering to support lifelong learning while maintaining high professional ethical standards
- To work in a team using common tools and environments to achieve project/organizational objectives.
- To pursue life-long learning as a means of enhancing the knowledge base and skills necessary to contribute to the improvement of their profession and community ensuring

essential knowledge to pursue M.Sc. & thereafter Ph.D. degree in Industrial Chemistry in progression.

SCHEME OF INSTRUCTION AND EXAMINATIONS

For Students Admitted From A.Y. 2019 -20 & Onwards

Semester-I									
Course Code	**Course**	**Hrs. of Instruction/ week**			**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
		Th	**Pr**	**Tu**		**CIA**	**SEE**	**Total**	
Part-I									
19ULCEN01	**Functional English-I**	**3**	**-**	**-**	**3**	**40**	**60**	**100**	**3**
Part-II									
19UICCC101	**Core-1 Industrial Instrumentations**	**3**	**-**	**-**	**3**	**30**	**70**	**100**	**3**
19UICCC102	**Core-2 Renewable & Non-Renewable Sources**	**3**	**-**	**-**	**3**	**30**	**70**	**100**	**3**
19UICDA101	**DSE Allied-1 Chemistry-I**	**4**	**-**	**-**	**3**	**30**	**70**	**100**	**3**
19UICCC103	**Core Practical-1 Industrial Instrumentations Practical**	**-**	**6**	**-**	**3**	**20**	**30**	**50**	**3**
19UICCC104	**Core Practical-2 Renewable & Non-Renewable Sources Practical**	**-**	**6**	**-**	**3**	**20**	**30**	**50**	**3**
19UICDA102	**DSE Allied Practical-1 Chemistry-I Practical**	**-**	**3**	**-**	**3**	**20**	**30**	**50**	**1**
		28						**550**	**19**
PART-III									
	AECC-I Environmental Science	**1**	**-**	**-**	**-**	Remarks at the end of semester-2			**-**
	SEC-I Value Education for	**1**	**-**	**-**	**-**	Remarks at the end of semester-2			**-**

	Consciousness Development								
		30							**19**

Semester-II									
Course Code	Course	Hrs. of Instruction/ week			Exam Duration in Hours	Maximum Marks			Credits
		Th	Pr	Tu		CIA	SEE	Total	
Part-I									
19ULCEN02	Functional English-II	3	-	-	3	40	60	100	3
Part-II									
19UICCC201	Core-3 Surface Chemistry	5	-	-	3	30	70	100	5
19UICCC202	Core-4 Polymer Science & Technology	4	-	-	3	30	70	100	4
19UICDA201	DSE Allied-2 Chemistry-II	4	-	-	3	30	70	100	3
19UICCC203	Core Practical-3 Surface Chemistry Practical	-	3	-	3	20	30	50	1
19UICCC204	Core Practical-4 Polymer Science& Technology Practical	-	6	-	3	20	30	50	2
19UICDA202	DSE Allied Practical-2 Chemistry-II Practical	-	3	-	3	20	30	50	1
		28						550	19
PART-III									
19AEES01	AECC-I Environmental Science	1	-	-	-	Remarks			2
19AEVE01	SEC-I Value Education for Consciousness Development	1	-	-	-	Remarks			2
		30							23

Semester-III									
Course Code	Title	Hrs Instruction Per Week			Exam Duration Hrs	Maximum Marks			Credits
		Th	Pr	Tu		CIA	SEE	Total	
Part-I									
19ULCEN03	Advanced English Language-I	3	-	-	3	40	60	100	3
Part-II									
19UICCC301	Core-5 Unit Operations	5	-	-	3	30	70	100	5
19UICCC302	Core-6 Heavy Chemicals	4	-	-	3	30	70	100	4
19UICCC303	Core-7 Material Science	4	-	-	3	30	70	100	4
19UICDA301	DSE Allied-3 Physics-I	3	-	-	3	30	70	100	3
19UICCC304	Core Practical-5 Unit Operations Practical	-	3	-	3	20	30	50	1
19UICCC305	Core Practical-6 Heavy Chemicals Practical	-	3	-	3	20	30	50	1
19UICDA302	DSE Allied Practical-3 Physics-I Practical	-	3	-	3	20	30	50	1
		28						650	22

Semester-IV									
Course Code	Title	Hrs Instruction Per Week			Exam Duration Hrs	Maximum Marks			Credits
		Th	Pr	Tu		CIA	SEE	Total	
Part-I									
19ULCEN04	Advanced English Language-II	3	-	-	3	40	60	100	3
Part-II									
19UICCC401	Core-8 Unit Processes	4	-	-	3	30	70	100	4
19UICCC402	Core-9 Fine Chemicals	4	-	-	3	30	70	100	4
19UICCC403	Core-10 Mass & Energy Balance	4	-	-	3	30	70	100	4
19UICDA401	DSE Allied-4 Physics-II	3	-	-	3	30	70	100	3
19UICCC404	Core Practical-7 Unit Processes Practical	-	6	-	3	20	30	50	2
19UICCC405	Core Practical-8 Fine Chemicals Practical	-	3	-	3	20	30	50	1
19UICDA402	DSE Allied Practical-4 Physics-II Practical	-	3	-	3	20	30	50	1
		30						650	22

Semester-V									
Course Code	Title	Hrs Instruction Per Week			Exam Duration Hrs	Maximum Marks			Credits
		Th	Pr	Tu		CIA	SEE	Total	
Part-II									
19UICCC501	Core-11 Principles of Chemical Engineering-I	5	-	-	3	30	70	100	5
19UICCC502	Core-12 Dyes & Pigments	4	-	-	3	30	70	100	4
19UICCC503	Core-13 Industrial Utilities (Self-Study)	1	-	-	3	30	70	100	4
19UICDC501/ 19UICDC502	DSE Core Elective-1 Petroleum & Petrochemicals / Industrial Safety	4	-	-	3	30	70	100	4
19UICCC504	Core Practical-9 Principles of Chemical Engineering Practical	-	3	-	3	20	30	50	1
19UICCC505	Core Practical-10 Dyes & Pigments Practical	-	6	-	3	20	30	50	2
19UICDC503/ 19UICDC504	DSE Core Elective Practical-1 Petroleum Analysis Practical / Industrial Safety Practical	-	3	-	3	20	30	50	1
19UICCC506	Core-14 Computer Based Test	-			3	100	-	100	1
19UICGE01	Generic Elective-I	2	-	-	-	100	-	100	2
	Industrial Training & Project Report/ Survey/ Review Writing/ Seminar	2	-	-	Evaluation at the end of Semester - VI				-
		30						750	24

Semester-VI									
Course Code	Title	Hrs Instruction Per Week			Exam Duration Hrs	Maximum Marks			Credits
		Th	Pr	Tu		CIA	SEE	Total	
Part-II									
19UICCC601	Core-15 Principles of Chemical Engineering-II	4	-	-	3	30	70	100	4
19UICCC602	Core-16 Analytical Chemical Technique	4	-	-	3	30	70	100	4
19UICCC603	Core-17 Pharmaceuticals	4	-	-	3	30	70	100	4
19UICDC601/ 19UICDC602	DSE Core Elective-2 Industrial Management / Chemistry of Natural Products	4	-	-	3	30	70	100	4
19UICCC604	Core Practical-11 Analytical Chemical Technique Practical	-	6	-	3	20	30	50	2
19UICCC605	Core Practical-12 Pharmaceuticals Practical	-	3	-	3	20	30	50	1
19UICDC603/ 19UICDC604	DSE Core Elective Practical-2 Industrial Management Practical / Chemistry of Natural Products practical	-	3	-	3	20	30	50	1
19UICGE02	Generic Elective-II	2	-	-	-	100	-	100	2
19UICCC606	Core-18 Industrial Training & Project Report/ Survey/ Review Writing/ Seminar	1	-	-	-	40	60	100	4
		31						750	26
								Total Marks	3900

PART III

Course Code	Semester	Particulars	Hrs of instruction/week	No. of Courses	Credit/Course	Total Credits
Ability Enhancement Compulsory Course (AECC)						
As per common list	I & II	AECC-I Environment Science	1	1	2	2
	IV & V	AECC-II Communication Skill/Soft Skills	2	2	1	2
					Sub Total	4
Skill Enhancement Course (SEC)						
As per common list	I & II	SEC-I Value Education for Consciousness Development	1	1	2	2
	Any Semester between II - V	SEC-II *Co-Curricular Course	> 40 hours in total	1	1	1
	Any Semester between II - V	SEC-III **Value Added Courses	40 hours in total	1	1	1
					Sub Total	4
					Grand Total	8

*** Co-Curricular Courses – Option to students to choose 1 from a list of courses offered by the college such as Add on Courses, Gandhian studies Certificate Course, Women Studies Course, etc.**

****Value Added Courses- option to student to choose at least 1 from a list of courses offered from UG departments.**

B. SC. INDUSTRIAL CHEMISTRY

TOTAL MARKS & CREDIT DISTRIBUTION

Sr.No.	Part	Total Marks	Total Credits
1.	Part-I: Language Course	400	12
2.	Part-II : Core, DSE-Allied, DSE Core, GE	3500	120
3.	Part-III: AECC-I & IIand SEC-I, II & III	Remarks	08
	Total	3900	140

DISTRIBUTION OF COURSES

PART-I: LANGUAGE COURSE

The following courses offered in First to Fourth Semester are compulsory.

Sr. No	Semester	Course Code	Course
1.	I	19ULCEN01	Functional English-I
2.	II	19ULCEN02	Functional English-II
3.	III	19ULCEN03	Advanced English Language-I
4.	IV	19ULCEN04	Advanced English Language-II

PART-II: CORE, DSE CORE, DSE-ALLIED, GE

CORE COURSES [THEORY]

Sr. No.	Semester	Course Code	COURSE
1.	I	19UICCC101	Industrial Instrumentations
2.		19UICCC102	Renewable & Non-Renewable Sources
3.	II	19UICCC201	Surface Chemistry
4.		19UICCC202	Polymer Chemistry & Technology
5.	III	19UICCC301	Unit Operations
6.		19UICCC302	Heavy Chemicals
7.		19UICCC303	Material Science
8.	IV	19UICCC401	Unit Processes
9.		19UICCC402	Fine Chemicals
10.		19UICCC403	Mass & Energy Balance
11.	V	19UICCC501	Principles of Chemical Engineering-I
12.		19UICCC502	Dyes & Pigments
13.		19UICCC503	Industrial Utilities (Self-Study)
14.		19UICCC504	Computer Based Test (MCQ based on Fundamentals & Principles of Core Subjects From Semester I to Semester V)
15.	VI	19UICCC601	Principles of Chemical Engineering-II
16.		19UICCC602	Analytical Chemical Technique
17.		19UICCC603	Pharmaceuticals

CORE COURSES [PRACTICAL]

Sr. No.	Semester	Course Code	COURSE
1.	I	19UICCC103	Industrial Instrumentations
2.		19UICCC104	Renewable & Non-Renewable Sources
3.	II	19UICCC203	Surface Chemistry
4.		19UICCC204	Polymer Chemistry & Technology
5.	III	19UICCC304	Unit Operations
6.		19UICCC305	Heavy Chemicals
7.	IV	19UICCC404	Unit Processes
8.		19UICCC405	Fine Chemicals

9.	**V**	19UICCC505	**Dyes & Pigments**
10.		19UICCC506	**Principles of Chemical Engineering**
11.	**VI**	19UICCC604	**Analytical Chemical Technique**
12.		19UICCC605	**Pharmaceuticals**

OTHER CORE COURSES

Sr. No	Semester	Course Code	Course
1.	V to VI	19UICCC606	Industrial Training & Project Report/ Survey/ Review Writing/ Seminar

DSE ALLIED COURSE

The DSE allied COURSE given in first to fourth semester which is compulsory.

Sr.No.	Semester	Course Code	COURSE
1.	I	19UICDA101	Chemistry-I
2.	II	19UICDA201	Chemistry-II
3.	III	19UICDA301	Physics-I
4.	IV	19UICDA401	Physics-II

DSE ALLIED COURSE [PRACTICAL]

The DSE allied COURSE Practical given in first to fourth semester is compulsory.

Sr.No.	Semester	Course Code	COURSE
1.	I	19UICDA102	Chemistry-I
2.	II	19UICDA202	Chemistry-II
3.	III	19UICDA302	Physics-I
4.	IV	19UICDA402	Physics-II

DSE CORE COURSE [THEORY & PRACTICAL]

Students are required to opt for any one of the courses offered in V & VI semesters respectively.

Sr. No	Semester	Theory		Practical	
		Course Code	Course	Course Code	Course
1	V	19UICDC501	Petroleum & Petrochemicals	19UICDC503	Petroleum Analysis
		19UICDC502	Industrial Safety	19UICDC504	Industrial Safety
2	VI	19UICDC601	Industrial Management	19UICDC603	Industrial Management
		19UICDC602	Chemistry of Natural Products	19UICDC604	Chemistry of Natural Products

GENERIC ELECTIVE

Sr. No	Semester	Course Code	Course
1.	V	19UICGE01	Any one course from list of courses offered across UG departments
2	VI	19UICGE02	

PART III: AECC AND SEC

Course Code	Semester	Particulars	Hrs of instruction/week	No. of Courses	Credit/ Course	Total Credits
Ability Enhancement Compulsory Course (AECC)						
As per common list	I & II	AECC-I Environment Science	1	1	2	2
	IV & V	AECC-II Communication Skill/Soft Skills	2	2	1	2
					Sub Total	4
Skill Enhancement Course (SEC)						
As per common list	I II	SEC-I Value Education for Consciousness Development	1 1	1 1	1 1	1 1
	Any Semester between II - V	SEC-II *Co-Curricular Course	> 40 hours in total	1	1	1
	Any Semester between II - V	SEC-III **Value Added Courses	40 hours in total	1	1	1
					Sub Total	4
					Grand Total	8

*** Co-Curricular Courses – Option to students to choose 1 from a list of courses offered by the college such as Add on Courses, Gandhian studies Certificate Course, Women Studies Course, etc.**

****Value Added Courses- option to student to choose at least 1 from a list of courses offered from UG departments.**