DHARMSINH DESAI UNIVERSITY

INSTITUTE DEVELOPMENT PLAN

Message from The Vice Chancellor

Dharmsinh Desai University in pursuance of its Vision to become multi-disciplined and learner-oriented university is working for academic expansion and diversification. DDU is offering programs in the areas of Engineering, Commerce, Business administration, Pharmacy, Dental and Medical sciences.

Since its inception, DDU's endeavor is to prepare students for leadership roles. We not only focus on their academics, but also emphasize on their holistic development. This is achieved by; cutting edge curriculum management blended with state of the art research facilities, providing the best infrastructure at the campus, providing industrial exposure through internships, and also by providing opportunities to participate in social work and community development activities.

"*If you Fail to Plan*, *you* are *Planning to Fail*" ... Benjamin Franklin

For continued development we need to plan in advance and execute the plan to perfection. I am sure, this institute development plan through institutional restructuring and consolidation, faculty development will help our University to generate knowledge through quality academic research, and disseminate the knowledge for the benefit of industry, academia and the society at large. This, I am sure will improve Global and National ranking of DDU.

Dr H M Desai
Vice Chancellor

PREAMBLE

Dharmsinh Desai University (DDU), located at Nadiad, is one of the leading institutions of learning in Gujarat. Since inception in 1968 as an institute for higher education in technology and engineering by the then Member of Parliament, Shri Dharmsinh Dadubhai Desai, it is committed to grooming students for leadership roles in the society. The institute started with 100 students in chemical engineering became state university in the year 2005. At present DDU is offering programs in management, dental, Pharmacy, Commerce and Medical sciences with student strength more than 6000.

Dharmsinh Desai University Development Plan, created with the participation of all stake holders, establishes the aspects on which the University will concentrate its actions for the next five years to ten years in cohesion with the optimal fulfillment of the Mission, Vision, and Institutional Strategic Directions, through compliance.

The major steps involved in development of this plan includes performing the SWOC analysis and identification of strategic areas, identification of actions to be taken to achieve desired Improvement, development of Implementation strategy and Evaluation of the outcomes. While preparing Institute development plan UGC guidelines and NEP2020 are taken into consideration. This document details the overall strategy of the DDU for proper planning and sustainable development.

This document is divided into four chapters. The first chapter dealing with 1) academic plan 2) Plan to improve teaching learning process 3) plan to improve research and development activities and 4) plan to deal with outreach and extension activities.

Research and development plan at DDU envisions the restructuring of Research Governance at DDU by strengthening Research and development cell already established as per the UGC guidelines. This is expected to improve already established research eco system and research collaborations with both Global and National Industries, research establishments and Academic institutions. This IDP also provides information how DDU is planning to improve manage its human resources, information management. DDU endeavors to develop good citizens in addition to providing well trained professionals. Hence, Integrity and ethics in research are given at most importance. This plan also presents how university is planning to capacity development and research monitoring to ensure the plans are implemented and targets are achieved with in stipulated time period.

Vision and Mission of Dharmsinh Desai University

Vision of DDU

To become a multi-disciplined and learner-oriented university, closely associate with and responsive to the industry. To create supportive and caring environment for staff and students and to improve R&D activities in areas of national priority.

Mission of DDU

The University shall undertake programmes and projects for development of human resources, both through formal and non-formal delivery systems, in areas of professional pursuits in all walks of human endeavors, with accent on relevance, value addition, societal needs and futuristic pilot projects.

Quality Policy

The University is for individuals who wish to advance in the workplace, and emerge as competent professionals and noble citizens. The University meets these needs by delivering applied and professional programmes, primarily at the graduate and higher level, that anticipate and respond to the changing world and global economy. We are committed to the highest level of quality, teaching excellence and applied research that pursues solutions to real world problems.

SWOC Analysis of Dharmsinh Desai University

Table: SWOC Matrix for DDU

Strengths		Weakness
1. Legacy and Brand Value in Gujarat. 2. Alumni Network. 3. Infrastructure. 4. Human Resources. 5. Collaboration. 6. Strong Outreach experience 7. Management Commitment.		1. Low visibility outside Gujarat 2. Funding source heavily depended on fees. 3. Small Size. 4. Diversity heavily depends on admission committee. 5. Lack of differentiation. 6. Lack of core-competency in some areas 7. Low research focus 8. Lac of HR department
Opportunities 1. Growing Industry. 2. Demography advantage. 3. Emerging market for skill development. 4. Rise of entrepreneurship 5. Scope for Industry Linkages 6. Social entrepreneurship growth Opportunity 7. Foreign collaborations	**Strength Strategies** 1. Expand the reach of DDU 2. Develop more skill development programs. 3. Consolidate strength in Gujarat 4. Leverage Incubation cell 5. Leverage Corporate Network.	**Weakness Strategies** 1. Develop brand outside Gujarat 2. Generate more funding opportunity through networks. 3. Develop Testing and consultancy as a funding resource. 4. Find and strengthen core competence. 5.Strengthen HR policy
Challenges 1. Competition for students– National and International. 2. Competition for human resources– National and International 3. Over-regulation. 4. Change in attitude towards learning. 5. Technology Disruption like MOOC.	**Challenge-Strength Strategies** 1. Develop brand inside Gujarat and outside Gujarat 2. Build a bridge with regulators. 3. Focus on outcome-based learning to attract prospective students. 4. Strengthen placements to deliver more value. 5. Create environment for attracting and retaining human resources 6. Build technology capability for enhanced teaching and learning.	**Challenge-Weakness Strategies** 1. Consolidate position in the Home state for sustainability. 2. Build brand as a differentiator. 3. Increase scale of courses and departments. 4. Create Research centers in all departments.

Dharmsinh Desai University Development Plan

Contents

CHAPTER 1 ACADEMIC PLAN

1. Introduction

Dharmsinh Desai University (DDU) is a leading University in this region, recognized as Institute of National Importance by AICTE (MHRD). University has a Guinness Book of World Record for Social Work (Highest Eyes Pledges). Awarded as Best Regional University of Asia by Oxford UK. DDU recognized among the best 100 Universities of Asia, award by WCRC. This is the only University recognized by National Science Foundation (NSF) USA for its R & D in Nano Sciences.

Late Shri. Dharmsinh Desai (MP) founded DDIT (Dharmsinh Desai Institute of Technology as it was known then) in 1968 at Nadiad, with a view of providing education in Engineering and Technology to the youth of Gujarat. In the initial years, the institute offered only Diploma in Chemical Engineering, but gradually expanded its resources to include other branches. The institute, in recognition of its commendable standards of academic administration, was granted autonomy on 15th June 1991 and became the first ever college in Gujarat to have been granted such a status. In 2000 it achieved deemed university status and in 2005 achieved full university status. In its four decades of existence, DDU has earned a name for itself as the place of quality education in Engineering, Management, Commerce, Pharmacy and Dental Science. Its alumni are well placed both in India as well as abroad.

2. Academic Plan

Department/institution wise showing the courses proposed for first five years and second five years shown in the Table 1. Dharmsinh Desai University established in 1968 with one discipline of chemical engineering and at present it has all the professional programs. Total 37 programs offered by the University and the detail list is as under. Out of these programs DDU is planning to expand its activities related to 32 of the programs mentioned in Table-1.

Table 1. List of Faculties and Programs run at Dharmsinh Desai University, Nadiad

S.NO.	COURSE (1st Year Intake)	YEAR	GIA/ SF	Intake	Plan for next	
					5 Yrs.	10 Yrs.
1.	Bach. Of Pharmacy (B.Pharm)	2006	SF	60	60	120
2.	Bach. Of Dental Surgery (BDS)	2005	SF	100	100	150
3.	Bachelor of Medicine and Bachelor of Surgery –MBBS	2019	SF	150	200	250
4.	B.Tech. - Electronics & Communication Engg.	1981	GIA	56	56	56
			SF	85	85	100
5.	B.Tech. - Computer Engineering	1985	GIA	56	56	56
			SF	85	120	240
6.	B.Tech. - Chemical Engineering	1968	GIA	68	68	68
			SF	74	120	120
7.	B.Tech. - Instrumentation & Control Engineering	1981	GIA	56	56	56
			SF	17	60	60
8.	B.Tech. - Civil Engineering	1985	GIA	75	75	75
9.	B.Tech. - Information Technology Engg.	1999	SF	135	180	240
10.	B.Tech. - Mechanical Engineering	2010	SF	135	135	135
11.	Diploma Chemical Engineering (D.Ch.)	1968	GIA	60	60	60
12.	Bachlor Of Business Administration (BBA) – Hotel Management	2013	SF	25	60	60
13.	M.Tech. - Electronics & Communication Engg.	1986	SF	6	12	30
14.	M.Tech. - Computer Engineering	2002	SF	6	18	30
15.	M.Tech. - Chemical Engineering	1981	SF	6	18	30
16.	M.Tech. - Civil Engineering - Geotechnical Engineering	1986	SF	6	18	30
17.	M.Tech. - Civil Engineering - Structural Engineering	1986	SF	18	18	30
18.	Master Of Computer Application (MCA)	1987	GIA	30	30	30
			SF	30	30	60
19.	Master Of Business Administration (MBA)	1994	GIA	30	30	30
			SF	30	30	60
20.	M. Pharm (Pharmaceutics)	2011	SF	15	15	30
21.	M.Pharm (Pharmaceutical Quality Assurance)	2011	SF	15	15	30
22.	MDS – Orthodontia	2011	SF	3	3	6
23.	MDS -Oral Maxillofacial Surgery	2011	SF	3	3	6
24.	MDS –Conservative	2011	SF	3	3	6

25.	MDS –Prosthodontia	2011	SF	3	3	6
26.	MDS –Peridontia	2011	SF	3	3	6
27.	MDS -Oral Pathology & Microbiology	2011	SF	3	3	6
28.	Ph.D. (Engineering)	2001	SF	40	60	120
29.	Ph.D. (Management)	2001	SF	15	40	60
30.	Ph.D. (Pharmacy)	2001	SF	25	40	60
31.	Ph.D. (Physical & Social Sciences)	2001	SF	8	10	20
32.	Ph.D. (Dental Sciences)	2021	SF	22	40	60

The University started MBBS and its first batch will pass out in 2025. Next five years, planning to consolidate all the existing program and uplift it with all discipline must have PG and doctorate programs. Some of the faculties like Engineering, Pharmacy and Dental would like to start PG in additional specialization and also in contemporary and multidisciplinary areas. The youngest faculty of medical science would like to start PG programs within next five years and also specialized research programs in niece areas. Next ten years University is looking to start more PG in applied sciences and also going to introduce higher studies like Doctor of sciences and Doctor of Letters which will give more strength to research activities at DDU.

The University has very strong teaching learning system and as it is well established system. All the programs have systematic lesson plan, effective teaching learning pedagogy and regular feedback mechanism, and contents of the syllabus are delivered effectively. Through academic planning and audit ensure to teach full syllabus as per the calendar published in the beginning of the academic year. We look forward to continue the already existing system like delivering beyond the syllabus contents, lectures of the academic and industry eminent speakers. The sessions will assist the students in selecting the right career path after graduation. There are so many additional programs for the overall development of the students like the soft skill development lectures, communication skill, personality and attitude during interview conducted under memorial lecture series. Combined effect of all these activities will lead to enhanced placement of students.

3. **Present Infrastructure of various departments**

The present infrastructure of various departments is shown in the Table 2.

Table 2. Department wise present infrastructure

(i) Present scenario Existing Labs/Classrooms:			
	46 Classrooms–(FOT and FoMIS)		51000 Sq. Ft
Dept	Sr. No.	Name of Laboratory	Area (Sq. Mt.)
CE	1	Computer Department Lab -1	101.12
	2	Computer Department Lab -2	101.12
	3	Computer Department Lab -3	101.12
	4	Computer Department Lab -4	101.12
	5	Computer Department Lab -5	107.35
	6	Computer Department Lab -6	101.12
	7	Computer Department Lab -7	86.53
EC	1	Laboratory 1 (Basic Electronics)	106.21
	2	Laboratory 2 (Antenna Microwave)	106.21
	3	Laboratory 3 (Electronic Measurement)	106.21
	4	Laboratory 4 (Analog Electronics)	106.21
	5	Laboratory 5 (Communication)	106.21
	6	Laboratory 6 (Advance Communication)	106.21
	7	Laboratory 7 (Computer Programming)	58.77
	8	Laboratory 8 (VLSI)	52.58
	9	Laboratory 9 (Digital Signal Processing)	52.58
	10	Laboratory 10 (Electrical Machines)	106.21
IT	1	Computer Hardware Laboratory	146
	2	Software Development Laboratory	108
	3	Computer Network & Microprocessor Laboratory	108
	4	Advanced Computing Lab	108
	5	App Development Lab	102
	6	University Computer Centre (Programming Lab)	150
	7	Programming Lab	102
CH	1	Chemistry Lab	80
	2	Physics Lab	125
	3	Computer Lab-1	70
	4	Computer Lab-2	100
	5	HT Lab	125
	6	FFO Lab	125
	7	MO Lab	60
	8	MT/TP Lab	125

	9	IPC Lab	125
	10	GCT Lab	110
	11	CRE Lab	110
	12	Advance Instrumentation Lab	110
CL	1	Conc.Tech.Lab	140.4
	2	Highway Engg. Lab	97.2
	3	Geotech. Engg. Lab	183.6
	4	CAD Lab	97.2
	5	E.M.Lab	97.2
	6	Env.Engg.Lab	270
	7	Survey Lab	70
IC	1	Measurement and Instrumentation Laboratory	60
	2	Programming and Simulation Laboratory	60
	3	Process and Automation Laboratory	60
	4	Electronics Laboratory	60
	5	Biomedical Control System and Automation Laboratory	60
MH	1	Kinematic of Machine	110
	2	Dynamics of Machine	110
	3	Internal Combustion Engines Laboratory	100
	4	Refrigeration And Air-Conditioning	120
	5	Manufacturing Technology -I	180
	6	Manufacturing Technology -II	120
	7	Programming Lab	100
	8	Automobile System	100
	9	Material Science & Metallurgy Laboratory	110
	10	Mechanical Measurement and Metrology	130
	11	CADD Center	75
	12	Power Plant Engineering	75
	13	Fluid Mechanics Laboratory	135
	14	Fluid Power Engineering Laboratory	135
	15	CAM Lab	50
BBA - HM	1	Front Office Lab	60
	2	House Keeping Lab	60
	3	Restaurant	150
	4	Kitchen	120
MCA	1	MCA Computer Department Lab -1	106
	2	MCA Computer Department Lab -2	106
MBA	1	MBA Department Lab -	104

PHARMACY	1	Laboratory 1	122.68
	2	Laboratory 2	92.01
	3	Laboratory 3	92.01
	4	Laboratory 4	92.01
	5	Laboratory 5	92.01
	6	Laboratory 6	100.37
	7	Laboratory 7	100.37
	8	Laboratory 8	100.37
	9	Laboratory 9	100.37
	10	Laboratory 10	100.37
	11	Laboratory 11	100.37
	12	Laboratory 12	100.37
	13	Laboratory for PG (Ceutics)	111.47
	14	Laboratory for PG	92.01
	15	Laboratory for PG (QA)	83.96
	16	Laboratory for PG	100.37
	17	Animal House	44.96
	18	Computer center	132.83
Dental	1	Campus area (Dental Buidling)	108080 sq feet
	2	Class rooms with ICT (LCD- Projector, Wi-Fi / LAN) facilities	4 No
	3	Laboratories	11 No
	4	Seminar Halls with ICT (LCD- Projector, Wi-Fi / LAN) facilities	7 No
	5	Video Centre	1
Medical	1	Campus area (Medical Buidling)	
	2	Class rooms with ICT (LCD- Projector, Wi-Fi / LAN) facilities	
	3	Laboratories	
	4	Seminar Halls with ICT (LCD- Projector, Wi-Fi / LAN) facilities	
	5	Video Centre	
	6	Hospital	
	7	Hostel Facility	

List of Instruments / Equipment:

List of existing scientific Instruments / Equipment of Dharmsinh Desai University is provided in Annexure-I separately.

CHAPTER 2 TEACHING LEARNING PROCESS

1. Introduction

Most of the programs of the University are professional programs and need to follow the guidelines prescribed by concern regulators like AICTE, PCI, NMC, DCI etc. The University has state of the art infrastructure and labs with latest equipment's which provide necessary support for conducive learning.

The University will upgrade the infrastructure by adding smart boards in all the classrooms and all other teaching aids for effective learning. All laboratories will be enhanced with latest equipment's which provide facilities for advance research and testing facilities. University is planning to enhance its infrastructure in future with the help of industry linkages and mobilizing funds through various funding agencies like DST, GUJCOST, FIST etc and consultancy and testing services.

2. Pedagogy

The University has provided necessary facilities for teaching learning. It is upgrading its facilities to develop innovation eco system in teaching and evaluation. University is open to adapt innovative pedagogy time to time to keep up with the pace of developments in this area.

2.1 *The Case Study Method*

The value of the case study method is that it simulates a real environment & helps to prepare the student for real-life business situations in their future careers. Case discussions are supplemented with seminars, games, role plays, and group exercises. The case method is used to develop problem solving and decision making skills by putting students in the shoes of managers & applying theoretical skills to real-life unstructured problems, supporting the learning experience.

2.2 Group Work

Group work is a major component of most courses. The groups are formed in such a manner that students get to work with people from different educational, professional, and cultural backgrounds. Feedback from alumni has confirmed that the greater part of one's learning at the

Institute happens in group activities that range from preparing for case presentations to working on live industry projects. Group work is a major component of most courses. The groups are formed in such a manner that students get to work with people from different educational, professional, and cultural backgrounds. Feedback from alumni has confirmed that the greater part of one's learning at the Institute happens in group activities that range from preparing for case presentations to working on live industry projects.

2.3 *Term Projects*

Term Projects are an integral part of the curriculum which is a perfect mix of academic research and practical scenarios that are to be prepared by each student during the semester. It is a combination of in-depth research & analytical thinking on a topic which reflects the classroom learning and its relation to the current business scenario in the field of Management.

2.4 *Subject Term work*

The value of the termwork given for different subject is that it gives students exposer to real world problem solving and application of the knowledge they have acquired for that subject and to prepare the student for real-life application situations in their future careers. The termwork is evaluated by faculty/expert from prestigious universities/companies at the end of the semester.

2.5 *Internship*

The students are sent for full time internship cum training at reputed companies in the final semester. On the basis of their performance, majority of the students get their jobs at the same company as well. This internship helps the students to be competent with the recent happenings in the industries. This helps students to build their confidence for their first job

2.6 *Students Development*

The Programme is committed to develop practicality, professionalism and discipline in students, so that they acquire necessary concepts, skills and competencies with depth in all areas of management. The evaluation is done with multiple component approach. Various components like midterm exam, end term exams, test/quizzes, class participation/preparation, etc. are considered. Platforms like Weekly Lecture Series (WLS) are provided where experts from various fields share their knowledge and respond to queries so that students gain edge over diverse subjects. Students are also encouraged with required help provided; to participate in stale and rational level business contest, project competitions, write articles, etc. For making them highly competitive looking at, present situation, ethics and values form the backbone of all learning, which retains the integrity of students and thereby a good character. The art of leadership and teamwork are cultivated, as teams and their representatives deliver presentations in each subject. The syllabus is updated continuously and subjects like Contemporary Issues in Management are in pipeline to make students aware of latest developments in the field of Management.

Induction of New Programmes

The DDU intends to introduce variety of new age programmes such as Data Analytics, Data Science, Cyber security, Artificial intelligence and Machine learning, automation and robotics, etc. as per the requirement of the society/industry. Students will be exposed to practical learning with the help of industrial training-cum-projects based on the applications of the said course. Design of short-term courses will be based on industry requirements so that the students of DDU receive first-hand experience in professional environments.

The DDU further intends to expand its spectrum of Super-Specialty programs in Nano Technology and likewise advanced programs in other areas including health science.

Moreover, exchange programs in collaboration with other national/international organizations are greatly envisaged. The information about different exchange programs/fellowship/summer schools including DAAD, FIST, DST (GUJCOST), USIEF's Fulbright Fellowship, etc. is regularly provided to the students and faculty members. Also, in-house funding from the DDU to meet out the requirements for implementation of the above mentioned programmes, preclinical/clinical facilities and online subscription of various courses/modules is also provided. Facilities for specialized courses like robot surgery, satellite research, other pharmacy, Dental and medical related course will be started which will address the local need at the same time meeting the global standard, are also anticipated to be introduced in the next 5 years.

The department wise planning to introduce new programs/courses is highlighted in 7.1 (iii)

3. Existing Facilities for cultural activities, yoga and sports.

With NSS and many more activities clubs are encouraged by University to promote extracurricular activities and University has buildup new playground, various courts for volleyball, basketball and handballs. Also devolved latest Gym for faculty and students. The University will restart NCC in near future. The University has adopted village and all the faculty takes part in overall

The University has two fully air-conditioned, spacious and well-furnished auditorium with seating capacity of 350 and 500 audiences respectively. This auditorium is a regular venue for conferences, workshops and seminars. The objective behind the auditorium is to enhance the quality of education and to provide ample opportunity for our staff and students to exhibit their talents in cultural activities. To make this possible, the auditorium offers facilities such as LCD projectors, screens for delivering lectures and professionally-deployed audio-visual aids and mixing equipment. Every year the facilities of the auditorium are upgraded according to the need of the students as well as the infrastructural needs. For uninterrupted power supply, diesel generator sets with a total 250 KVA capacity are also available.

The students have a keen interest in cricket, volleyball, and badminton and to support their hobbies, we have a huge ground with the entire needed infrastructure required for the same. Every year sport calendar has been prepared and students are allowed to participate in various sports.

Large playgrounds for outdoor games are provided for all round curriculum enrichment of the students. In order to promote sports activity, the grounds are easily accessible as well as clean and well maintained. We have a dedicated team of workers who cater the needs of the maintenance of these areas. Sports hall for indoor games (carom, chess, etc.) and a common foyer with lawn are also available on the campus. We give utmost priority to mental health of our students by regularly conducting yoga workshops by our eminent faculties. We have dedicated halls as well as lush green lawns for the same. Sports week and a cultural fest are scheduled each year to promote cultural and sports activities in each of the departments wherein all the students and faculties participate and promote extracurricular attributes of our students.

The University is upgrading these facilities regularly and next ten years there will very good indoor as well as outdoor facilities will be available.

Online Programs: Online courses are need of the present time. The DDU intends to strengthen its Faculty resources and infrastructure for offering online programs in coming years so as to enhance its outreach to students and working professionals, who are not able to attend its on-campus programs. Some of these courses can also be offered to the regular students as value added courses.

Pedagogical Innovations: Development of MOOCS courses under SWAYAM platform and encouraging faculty members to enroll for the same, are some of the priority-based initiatives to be undertaken by the DDU in the years to come. For the course work of Ph.D. already adopted MOOC courses. Tech powered classrooms allowing for innovative pedagogical approaches like flipped classrooms, MOOCs, Collaborative learning, etc., would be built. Maximum output of students in terms of experiential learning and learning through Journal Clubs would be greatly emphasized. The various faculties of the DDU would establish some students/Faculty Chapters of professional bodies in their respective areas. Effective implementation of multi-model learning packages and software for better understanding of concepts is another projection for next five years. Master simulation based courses for faculty especially in Management and Information Sciences will be implemented. In order to promote professionalism, the DDU would encourage faculty to participate in national or international level conferences and strengthen the research environment through strong research policy. Critical thinking skills and evidence- based practice in patient care would be provided.

4. New Education Policy-2020

4.1 Multidisciplinary / interdisciplinary:

Dharmsinh Desai University (DDU) is having plan to transform into a holistic multidisciplinary institution by providing more opportunity to the students of multidisciplinary branches of Engineering, management, Pharmacy, Medical and Dental sciences. The University already offering subjects of humanities and science to the engineering students.

Based on the inputs of Industry and academic experts, The University offering core to advanced level value based subjects with revision in syllabus time to time along with CBCS pattern.

University offered interdisciplinary elective subjects to the engineering students on trial basis at UG level.

At present, DDU having system of multiple entry in the field of Engineering. The diploma passed out students directly included into second year of UG courses. We are in planning to incorporate multiple exit in near future. The multiple exit system is under consideration of discussion and planning stage. The multiple exit strategy is require thoughtful planning and careful implementation particularly in the field of professional education. DDU is keen to study the model adopted by various premier institution like IITS and NITs with respect to multiple entry/exit policy.

University promote multidisciplinary research work in the area of engineering, pharmacy and medical sciences to find probable solutions of various problems faced by Industry and society. At present, nearly 6 research projects are going on related to multidisciplinary / interdisciplinary approach.

4.2 Academic bank of credits (ABC):

DDU has initiated the process and within span of one year(2023), all the students on campus including new admission will be registered in ABC and will implement the process in spirit.

Academic Bank of Credits has been established on the lines of the National Academic Depository (NAD), in the sense, NAD is the backbone of ABC, where the students' academic data are held and academic awards are stored (i.e. storehouse of academic awards).

DDU has registered on ABC portal. The process of DDU students registration is going on and completed very soon. DDU has registered on National Academic Depository portal and Degree of 2022 pass out students is uploaded on the portal and very soon it will be published.

4.3 Skill development and Distance education/online education:

The majority of the courses offered by DDU are enhance the skill of students in the area of engineering, management, Pharmacy ,Medical and Dental Sciences. As a part of kill development mission of central Government DDU has started Hotel Management Program in the year 2013. Most of the programs of DDU are professional programs so skill and employability are inbuilt. DDU incorporated various subjects/topics related to environmental science, human values and ethics, and professional ethics in each stream of engineering and management. DDU is trying to design the credit structure of course to ensure that all students take at least one vocational course before graduating. Also, DDU invited industrial experts in each semester to address the issues faced by industries and make them aware about latest trends of Industrial world. At present, we do not offering DLP/online course to the students but encourage them to join the course offered by various national platforms like NPTEL and taking their feedback about effectiveness of such kind of DLP/Online programmes.

DDU adopted excellent practice of industrial training/internship for final semester in the engineering disciplines since last 25 years. Student have to go to industries for their project work as part of syllabus of their final semester and try to learn practical approach of industrial sector to enhance their skill.

4.4 Appropriate integration of Indian Knowledge system (teaching in Indian Language, culture, using online course

Dharmsinh Desai University is in planning to establish the Center of Excellance on Indian Knowledge Systems in near future to make them aware about the glory of Indian tradition and history. At present, DDU designed one week program during the first year of orientation of students to make them aware about the Indian knowledge systems. Apart from this, DDU is planning to offer specific subject, Universal Human Values, in the under graduate level to incorporate the root of Indian tradition and culture. As a part of implementation of the subject, DDU encouraging faculty members to join AICTE sponsored Universal Human Values course as part of train the trainers.

On the trial basis, DDU introduce the teaching in local language (Gujarati) along with English in Diploma chemical Engineering. We are in planning to introduce same for the UG level, but we are facing issue of unavailability of text books and reference books in the Gujarati language. We are hopeful to do the same in next couple of years.

4.5 Focus on Outcome based education (OBE):

DDU provide education mainly in the area of professional courses like engineering, management, Pharmacy, Medical and Dental Sciences. All such programes are carefully designed their syllabus of each subject based on the model curriculum suggested by various agencies like AICTE, Pharmacy council, Medical and Dental council. The concept of OBE is already been taken care in the syllabus.

In the process of NAAC and NBA accreditation the Bloom's-Taxonomy is implemented successfully which has given very good impact on entire teaching learning process.

4.6 Faculty Development Plan:

Faculty development is part of academic panning and audit. Under ISO system every department plan for faculty development program and under QIP (Quality Improvement of Program) of UGC/AICTE giving opportunity to pursue higher qualification from reputed national institute to faculty members. University also promote all the faculty members to pursue Master and Doctorate degree. There are popular and long term FDP program of IIMs and IITs, every year faculty members are sent to participate these FDP programs. University also conduct FDP so good number of faculty members can take part in it.

5. Industry Institute Linkages

DDU has very good relationships and involvement with industry. The University has built up various centre for excellence with the help of industry in PPP mode. The University involves industry experts in BoS, Examination, Teaching and compulsory semester long internship in each discipline- Have MoU with foreign industry for internship. For Ph.D. and Post doc in collaboration with industry and foreign University (At present with ISRO, PRL, IIMA etc.). All Ph.D. thesis evaluation is done by foreign experts.

The University has also designed Industry specific course (Ex. Diploma chemical as per the need of Reliance Industry, Bridge courses for diploma holder of GSFC and GNFC for promotion of senior technocrats). This also gives consultancy and research opportunity to students.

The Faculty of Technology has many unique centre of excellence

1. Shah-schulman Center For Surface Science And Nanotechnology)

2. Anchor Institute- Chemicals & Petro Chemicals::
3. Research & Development Centre of DDU
4. BOSCH – Rexorth centre for excellence

The centre model is of PPP mode with the support of Government many industrial partners.

Main Objectives are -

- Established/strengthen various Center of Excellence at DDU
- Skilled Development Center in the various area of manufacturing field
- R & D activities in the area of multidisciplinary research (PG and Ph.D.)
- Develop certificate course through online/offline mode
- Fund mobilization with consultancy and research projects

The Department of chemical Engineering under the head of NANO technology centre have following Industrial partners. Asian Paints Limited, Universal Medicap Ltd., Colourtex Industries Ltd., United Phosphor us Ltd., Sun Pharmaceutical Industries Ltd., Galaxy Surfactants Ltd., Zydex Industries Ltd., Jasubhai Foundation., Deepak Nitrite Ltd., Alps Chemicals Pvt.Ltd.

Multidisciplinary academic activities going on for PG, PhD and research projects. The departments involved are - Engineering, Dental, Pharmacy, Management and Medical.

Next phase will develop network sector specific and develop cluster for research and development like 1) Pharmaceutical 2) Paint Industry 3) Cement Industry 4) Chip manufacturing 5) Dye industry 6) Fertilizer industry and 7) Tiles manufacturers

6. Implementation of NEP 2020 and Institutional Development Plan

Dharmsinh Desai University is committed to implementation of National Education Policy 2020 (NEP 2020) in the phase wise manner with the support and guidance of Government of Gujarat. The summary of NEP 2020 in context with University are,

- To promote multidisciplinary/Interdisciplinary research work
- To focus on outcome based education system
- To enhance employability of student by skill development /Online distance learning
- To strengthen the industry-Institute interaction
- To create world class infrastructure of university
- To strengthen the roots of Indian Knowledge system

- To develop overall personality of the students
- To prepare roadmap of Institute development

Dharmsinh Desai University is already started to fulfill the above mentioned objectives of NEP 2020. The University having mission and vision align with the objectives of NEP 2020.

To fulfilled the objectives of NEP 2020 and University's mission and vision, DDU is planning to boost its infrastructure in to two stages.

(i) Updating of existing infrastructure

(ii) Proposed new infrastructure

Updating of existing infrastructure is associated with the procurement of new equipment and instruments for the laboratory to match the requirement of industry as a short term goal. The long term goal of NEP 2020 will be addressed under the category of new infrastructure.

6.1 Updating of Existing infrastructure (3 to 5 years)

DDU is one of the oldest Technological institute in the state of Gujarat. DDU provides skilled man power to the Industrial sector through its class room teaching backed by well equipped laboratory sessions in all discipline till today. Due to rapid technology change in the last two decade, DDU needs to improve its existing infrastructure of class rooms and laboratory equipments/instruments in all the branches of engineering. Apart from Technical branches, the faculty of pharmacy, Dental and medical science also focusing on the quality education in the field of healthcare. The newly developed such branches also required improvement in the laboratory equipment to match the quality of education. The following laboratories are required updating in the different area of engineering.

(i) Additional Requirement for Laboratory Equipment for FoT(Plan for next five years)**:**

Department of Electronics and Communication (EC)/ Department of Information Technology/Department of Computer Engineering (CE)					
No.	**Year**	**Name of Lab Equipment**	**Nos.**	**Approx. Price (₹)**	**Purpose**
1	2022-2023	PLC Trainer	2	3,70,000	For regular laboratory

2	2022-2023	Function Generator	15	6,00,000	For regular laboratory
2	2022-2023	Power Supply	23	7,50,000	For regular laboratory
4	2023-2025	Robotics Applications Using 1d Sensors And Embedded Artificial Intelligence Design	5	3,00,000	For Robotics / Artificial intelligence laboratory and research.
5	2025-2026	Robotics Applications Using Image Sensor And Artificial Intelligence	5	1,00,000	This module interfaces image sensors with the hand held device for robot imaging applications. Further, 1D and 2D sensors can be embedded for better efficiency in research projects.
6	2024-2025	PCB Printer	1	3,00,000	These equipment aware students about automated prototype PCB design at nanoscale. Efficiently, accurately and Easily realize circuit based project/ AI-ML based applications in shorter time.
7	2024-2025	Vector network analyzer	1	31,00,000	For microwave and antenna laboratory and research. To characterize the performance of RF and microwave components and systems in terms of insertion loss, return loss, and S-parameters.
8	2024-2025	Anechoic chamber with single axis	1	14,00,000	It is used for RF testing of antennas,

		antenna positioner			radars, and their radiation patterns as well as electromagnetic interference. Additionally, various consultancy works can also be carried out with the chamber.
9	2025-2027	FPGA Kits	10	5,00,000	To implement VLSI based applications/projects at deep submicron technology.
10	2025-2027	AI enabled hardware & Smart sensors	3	5,00,000	To develop Artificial Intelligence based applications/projects and research work in computer vision.
11	2023-2024	High Configuration Computers with GPU	20	17,00,000	Research and Project Work
12	2027-2028	Apple Mac computer with latest version of macOS	50	62,50,000	iOS App Development for IT/CE Lab
	Total Amount(INR)			**1,58,70,000**	

Department of Civil Engineering					
No.	**Year**	**Name of Lab Equipment**	**Nos.**	**Approx. Price (INR)**	**Purpose**
1	2023-2025	Software on Geo-5	1	4,00,000	To design and analyse various Geotehnical problems
2	2023-2025	Software on gINT	1	4,00,000	To prepare soil reports
3	2023-2025	Software on Plaxis 2D/3D	1	15,00,000	To carry out Finite Element Analysis of various Geotechnical

					problems
4	2023-2025	Triaxial digital with pore water pressure measurements	1	4,50,000	Measurements of shear strength parameters of soil
5	2023-2025	Ground Penetrating Radar		15,00,000	To find location of utlities under ground
6	2023-2025	Pressuremeter test	1	5,00,000	Measurements of confining pressure of soil
7	2023-2025	Static Cone Penetration Test	1	8,00,000	To determine ground penetration resistance according to field condition
8	2023-2025	Dynamic Cone Penetration Test and Standard Penetration Test with Auto Trim hammer arrangements, rod and tubes	1 set each	15,00,000	
9	2023-2025	Atomic Absorption Spetrophotometer_with Hydride generator	1	12,20,000	For anlayzing various heavy metals.
10	2023-2025	D.O.Meter	1	90,000	For regular laboratory purpose
11	2023-2025	Nephelometer	1	15,000	For Laboratory pupose
12	2023-2025	pH meter	1	12,000	For Laboratory pupose
13	2023-2025	Total Kjeldhal Assembly	1	1,05,258	For Research work
14	2023-2025	Distillation Assembly	1	6500/Piece	For Research work
15	2023-2025	Conductivity meter	1	57,600	For Laboratory pupose
16	2023-2025	Upgradation of Automatic Compression Testing Machine-2000 kN servo control	1	500000	For Laboratory and research pupose
17	2023-	Calorimeter For Heat of Hydration of	1	Rs.80000	For Laboratory pupose

	2025	Cement			
18	2023-2025	Flexural Testing Machine (Servo controlled)	1	Rs.750000	For Laboratory pupose
19	2023-2025	Penetration Resistance or Windsor Probe EQuipment	1	Rs.400000	For Laboratory pupose
20	2023-2025	RCPT permeability equipment	1	Rs.500000	For Laboratory pupose
21	2023-2025	Radiographic Test equipment	1	Rs.500000	For Laboratory pupose
22	2023-2025	Impact eco test equipment	1	Rs.600000	For Laboratory pupose
23	2023-2025	Pavement Core Drilling Machine	1	Rs.150000	For reserach and consultancy
24	2023-2025	Total Station	2	9,00,000/-	For laboratory purpose
25	2023-2025	Distomat	2	1,00,000/-	For laboratory purpose
26	2023-2025	DGPS	1	7,50,000/-	For laboratory purpose
27	2023-2025	UAV (Drone with post processing software)	1	12,00,000/-	For laboratory purpose
		Total Amount(INR)		**1,49,86,000**	

Department of Chemical Engineering/Mechanical Engineering					
No.	**Year**	**Name of Lab Equipment**	**Nos.**	**Approx. Price (INR)**	**Purpose**
1	2023-2024	computers	70	45,00,000	Design Simulation Lab - additional Computer lab as per new teaching scheme
2	2023-2024	Various Softwares for Research like Aspen,ChemCAD,HTRI	30 users	30,00,000	Research and Consultancy work

		etc.			
3	2023-2024	Two Post Lift	1	1,80,000	To Develop Electric Vehicle lab
4	2023-2024	7 Drawer trolley with 70 Insulated Hand-tools	1	2,40,000	To Develop Electric Vehicle lab
5	2025-2026	Laptop / Toughbook & VCI	1	3,80,000	To Develop Electric Vehicle lab
6	2023-2024	Multimeter, Insulation Tester, Test probes,Safety Cone, Safety tools	1	1,10,000	To Develop Electric Vehicle lab
		Total Amount(INR)		**84,10,000**	

Department of Computer Applications (BCA)					
No.	**Year**	**Name of Lab Equipment**	**Nos.**	**Approx. Price (INR)**	**Purpose**
1	2023-2024	High configuration computers	53	26,50,000	To meet requirement of technology developments
2	2023-2024	laptops of latest configuration	2	1,00,000	for teaching in ICT enabled classrooms
3	2025-2026	LED Projectors	1	35,500	for teaching in ICT enabled classrooms
		Total Amount(INR)		**27,85,500**	

Faculty of Pharmacy					
No.	**Year**	**Name of Lab Equipment**	**Nos.**	**Approx. Price (₹)**	**Purpose**
1	2023-2027	Particle size and Zeta Potential analyzer	1	10,00,000	Research and Consultancy

2	2023-2027	Prob Sonicator	1	2,00,000	Research and Consultancy
3	2023-2027	Lyophilizer	1	10,00,000	Research and Consultancy
4	2023-2027	Microcentrifuge	1	1,50,000	Research and Consultancy
5	2023-2027	UPLC	1	18,00,000	Research and Consultancy
6	2028-2033	HPTLC	1	30,00,000	Research and Consultancy
7	2028-2033	FT-IR	1	15,00,000	Research and Consultancy
8	2028-2033	High Pressure homogenizer	1	25,00,000	Research and Consultancy
9	2028-2033	Biosafety cabinet	1	3,00,000	Research and Consultancy
10	2028-2033	GC-MS	1	45,00,000	Research and Consultancy
	Total Amount(INR)			**1,59,50,000**	

Faculty of Dental Science					
No.	**Year**	**Name of Lab Equipment**	**Nos.**	**Approx. Price (INR)**	**Purpose**
1	2023-2027	Dental Chairs	36	1,08,00,000	For various departments of Dental Science
2	2023-2027	Computer Facility	40	20,00,000	For mordanization of lab
	Total Amount(INR)			**1,28,00,000**	

(ii) Additional Building Space FoT(Plan for next five years)**:**

Dept.	**No.**	**Year**	**Name of Laboratory/Classroom**	**Area (Sq. m)**	**Cost (30000 Rs/Sq. m)**	**Purpose**
CE	1	2023-24	Computer Lab	101.12	30,33,600	For Subject related to Computer Programming
	2	2023-24	Seminar Hall capacity of 250 students	200	60,00,000	For Expert lecture / Combined Lecture
	3	2024-25	Computer Lab	101.12	30,33,600	For Subject related to Software

						Development
	4	2024-25	Class room	66	19,80,000	For Post graduate students
EC	1	2023-24	Research Lab	100	30,00,000	Advanced Multi disciplinary Research
	2	2023-24	Computer Simulation Lab	100	30,00,000	For Simulation based Subject Experiments
	3	2023-24	Hardware Lab	100	30,00,000	To overcome deficit as per AICTE requirements
	4	2024-25	Seminar Hall (150 Students)	200	60,00,000	For Expert lecture / Combined Lecture
IT	1	2024-25	Dedicated Research Project Laboratory	110	33,00,000	Research & Project Work
	2	2024-25	1 ClassRoom (ICT enable)	110	33,00,000	Teaching purpose
	3	2025-26	1 Computer Laboratory with Apple MAC Machine	110	33,00,000	iOS App Development
CH	1	2023-24	(Design Simulation Lab)	50	15,00,000	As per new teaching scheme
	2	2024-25	(Numerical Techniques Lab)	50	15,00,000	As per new teaching scheme
	3	2025-26	Mechanical operations lab	50	15,00,000	As per new teaching scheme
BCA	1	2023-24	1 ICT enabled classroom	110	3300000	Teaching purpose
PH	1	2023-2025	Sophisticated Instrument Lab	100	30,00,000	R & D Purpose
PH	2		Cell line Study lab	200	60,00,000	R & D Purpose
Dental	1	2023-2027	Seminar Hall with ICT Facility	110	33,00,000	
Dental	2	2023-2027	Prosthodontics Lab/Clinics	100	30,00,000	CAD CAM lab
Dental	3	2023-2027	Orthodontics Lab/Clinics	50	15,00,000	Aligner lab
Dental	4	2023-2027	Oral medicine and radiology Lab/Clinics	50	15,00,000	CBCT centre
Dental	5	2023-	Oral Surgery	100	30,00,000	Advance

		2027				Implantology centre
Dental	6	2023-2027	Oral Pathology	50	15,00,000	Immunohistoch-emistry lab
Dental	7	2023-2027	Conservative and endodontics	50	15,00,000	Microendodontics clinic
Dental	8	2023-2027	Pedodontics	50	15,00,000	Day care center
Dental	9	2023-2027	Periodontics	50	15,00,000	Advance electrocautery center
FoT	1	2023-2027	Boy's and Girls Hostel	@4500	13,00,00,000	

DDU wants to develop approximately **7000 sq mt** of infrastructure for creating new laboratory at the cost of Approximately **Rs.25,86,52,000** in the first phase of IDP (2023-2027).

Proposed new courses/branch to be introduced at DDUDept.	Year	Name of Course	Name of Programme	Need	NEP Relevance
EC	2023-24	Introduction to Internet of Things	B. Tech – EC	Students willing to develop skills in the field of IoT. Scope for more employability as well as start ups in this field	Enhancing employability of the Youth through Professional vocational education in latest trends.
	2023-24	Introduction to Security of CyberPhysical Systems	B. Tech – EC		
	2023-24	Ubiquitous Sensing, Computing and Communication	B. Tech – EC		
	2023-24	Embedded Systems for IoT	B. Tech – EC		
	2023-24	IoT with Arduino, ESP, and Raspberry Pi	B. Tech – EC		
	2024-25	Introduction to Robotics	B. Tech – EC		
	2024-25	Mechanics of Robots	B. Tech – EC		
	2024-25	Microprocessor & Embedded Systems	B. Tech – EC		
	2024-25	Control of Robotic Systems	B. Tech – EC		
	2024-25	Project in Robotics	B. Tech – EC		
	2024-25	Introduction to AI-ML	B. Tech – EC		
IC	2023-24	R Programming	B.Tech.	Skill development to enhance employability	Yes
	2024-25	Cyber Physical System	B.Tech.	Skill development to enhance employabilit	Yes

				y	
	2024 -25	Entrepreneurship and Innovation	B.Tech.	To encourage startup and innovation	Yes
	2025 -26	Embedded Systems	B.Tech.	Skill development to enhance employability	Yes
	2024 -25	Economics and Management	B.Tech.	To encourage startup and innovation	Yes
	2026 -27	Smart Instrumentation	B.Tech.	Skill development to enhance employability	Yes
MH	2023 -24	Artificial Intelligence and Machine Learning (With Minor Degree)	B.Tech.(Mechanical Engineering)	To enhance the employability skills and impart deep knowledge in emerging areas of AI & ML	The NEP-2020 envisages a student centric educational system with an opportunity to learn multiple courses and programmes and provides a comparable and globally competitive educational system. Also, NEP focuses more towards a multidisciplinary undergraduate education.
	2023 -24	Electric Vehicles (With Minor Degree)	B.Tech.(Mechanical Engineering)		
	2023 -24	Robotics (With Minor Degree)	B.Tech.(Mechanical Engineering)		
	2023 -24	Automation (With Minor Degree)	B.Tech.(Mechanical Engineering)		

Faculty of Pharmacy

Name of Program/Course	Commencement Year	Proposed Intake
First Five Year (2023-24 to 2027-28)		
M.Pharm in Pharmacology	2026-27	09
Second Five Year (2028-29 to 2033-34)		
M.Pharm in Regulatory Affiars	2028-29	09
Pharm D.	2028-29	30

(iii)**Proposed New Centre for Excellence (2023-2027)**

1. **Center of Excellence on Green Technologies for Sustainable Development**

   - **Objectives:** (i) Providing direction for future development of Chemical Process Industries for sustainability. (ii) Providing society with educational information to help raise awareness and correct misconceptions (iii) Liaising with government agencies and national institutions in policy matters to secure decisions based on accurate information (iv) Getting direction for moving from Linear Economy to Circular Economy (v) Promote research in the area of Process technology, waste water treatment, Air Pollution and hazardous solid waste management (vi) Enhancing contribution of smart materials to sustainable development, innovation and quality of life.

   - **Steps taken for CoE at DDU :** Initiate the activity of preparation of proposal and contacted few industries to join hands with us on PPP model. Already organized one International conference on the same topic and contacted various chemical industries to join hands with us.

   - **Need Help for funding:** To strengthen the the activity of the proposed CoE, we need to established the center and invite various industries to participate with their problems and share with our next generation. We have to develop various laboratories and R & D facility to promote research in the field of chemical, environmental engineering, pharmaceutical science, and basic chemistry along with core branches of engineering. We are expecting seed amount from the government to start up the activities of the proposed center. DDU required financial support of **Rs. 1.5 Crore** from the Government. DDU is approaching various industries to join hands with the proposed CoE for technical as well as financial support.

2. **Centre of Excellence - Electronics, Robotics and Virtual Reality**

   - **Objective:** To promote multidisciplinary research in the area of Basic electronics and Communication along with skilled development courses
   - **Steps taken for CoE :** Already Established R & D center with some basic facility and initiated research activities in the area of communication technology with the help of various agencies including ISRO.
   - **Need Help for funding::** To strengthen the research facility in the said area, we need to purchase more sophisticated instruments to fulfilled the above objectives. We are seeking for seed money from GoG to carry out research along with skilled development courses at advanced level with the support of **Rs. 2 Crore**.

3. **Skill Development Center – in the area of Chemical and Petrochemicals Sector (Anchor Institute)**

   - **Objective:** To conduct skill development programme for the fresher (graduates/Dip/ Certificate holder students) and refreshers courses for experienced man power of chemical industries and provide skilled man power to Chemical and allied industries
   - **Steps taken under Skill development Center:** Department having status of Anchor Institute given by Department of Industries and mines,GoG in the area of Chemicals and petrochemical sectors, Already conducting more than 50 industrial training programme for the duration of 3-days to 3 months.
   - **Need Help for funding:** To strengthen the skilled development activities including short term and long term certificate courses in various area of Chemical engineering(manufacturing, environment and safety, QA/QC etc), we need to develop existing laboratory facilities and manpower to fulfilled the above objectives. Also, DDU is planning to expand the horizon of the center for the different sectors

starting from Electronics and Telecom, Industrial Automation, Design and Testing, Construction field, Pharma and Health care to provide more skilled manpower to the Industries. The financial support of **Rs. 10 Crore** is required to fulfilled the goal of Skilled Development Center establishment.

4. **Centre of Excellence in Automation Technologies**

   - **Objective:** The aim is to bridge the technology gap between industry and academics with hands-on experience and new pedagogical methods to students pursuing UG and PG programmes in engineering; thereby improving employability and entrepreneurship.
   - **Steps taken under CoE:** Department having basic infrastructure of robotics, sensoric , pneumatic and hydraulic laboratory and start to offer certificate course under skill development program.
   - **Need Help for funding:** To strengthen the skilled development activities in various area of Automation technologies, we need to upgrade the existing laboratory facilities to the advance level and manpower to fulfilled the above objectives. The financial aid or **Rs.1.5 Crore** is expected from government to strengthen the activities of the Center.

5. **Centre of Excellence: Structural Design Center**

   - **Objective:** To cater need of Professional Practice in Structural, Geotechnical and Hydraulic Design Projects by Government as well as private organizations. Also, to develop Software tools for design practice in Civil Engineering. To explore Research potential in advances in concrete technology and design practice for Roads and Buildings with inter-disciplinary interactions.
   - **Steps taken under CoE:** The department is well equipped with Computer Aided Design Lab and NABL accredited Material Testing Laboratory. It includes advanced Software viz. ETABS, Staad Pro, Geo5, Z-Soil etc.
   - **Need Help for funding:** To develop laboratory for Research in Structural Engineering for Special Concrete Mixes to be used for Road Projects with improved

flexural and tensile strength, improved Thermal behavior for long lasting roads. For this need to develop lab in collaborations with Instrumentation and Control Department as well as Computer Engineering Department, Nano Technology Department etc. It is envisaged to develop a center of Advanced Concrete Technology. Basic infrastructure and expertise will be invested by our University. Necessary funds for equipment and external experts if required shall be provided by Government Grants**.** We are expecting **Rs. 2 crore** from the Government of Gujarat for the same.

7. **Library as learning resource:**

All the faculty has their own library and also having central library. The total books and other resources are as under.

Existing Library Resources			**Additional Library Resources Required**	
Type	**Number**	**Value**	**Phase 1 (2023-27)**	**Phase 2 (2028-32)**
Books	55000	21669524	150000	100000
Journals	516	1660669	1500	3000
E-Journals	412	1073608	1000	5000
E-books	8,11,05,330		10 Cr	--
Bibliographic databases	02 (ISID, DELNET)			
Bound volumes	8534			
CD & Video	1105			

Next five years the seating capacity of library will be doubles and new enhancement of infrastructure will be done. Next 5 years the library will be a learning resource in the state with advance technology resources and rare books. The development of the library needs additional fund of **Rs. 3,00,00,000** for the same.

Over all Summary:

To match with the requirement of NEP 2020, DDU is seeking for approximately Rs.46,00,00,000 for updating the existing laboratory facilities along with establishment of Center of Excellence in the different areas with focus on enhanced skill development activities in the first phase of IDP.

CHAPTER 3 RESEARCH AND DEVELOPMENT

1 Introduction

The Dharmsinh Desai University has clearly stated vision and Mission. DDU's vision is "To become a multi-disciplined and learner-oriented university which is closely associate with and responsive to the industry. To create supportive and caring environment for staff and students. To improve R&D activities in areas of national priority." **Mission of the university** "The University shall undertake programmes and projects for development of human resources, both through formal and non-formal delivery systems, in areas of professional pursuits in all walks of human endeavors, with accent on relevance, value addition, societal needs and futuristic pilot projects." Both the vision and mission of DDU are perfectly aligned with the national education polity 2020.

The broader objective of this section is to put in place a robust mechanism for developing and strengthening the research ecosystem at DDU, aligned with the provisions of NEP-2020. This includes creation of a conducive environment for enhanced research productivity and encourage collaboration across industry, government, community- based organizations, and agencies at the local, national, and international levels. This is expected to facilitate greater access to research through mobilization of resources and funding.

In the light of DDU's mission, needs assessment through wide consultations to identify the goals, priorities, and commitments of the institution was carried out. Based on identified goals and priorities research and development plan of the university is prepared to bridge gaps in human, financial resources as well as organizational setup. This research and development section of DDU's IDP quantifies the institution's goals using indicators and time-bound targets. Efforts are also made to develop annual activity plans that result, sequentially, in achieving the institution's goals. These activity plans are expected to serve as a tool for monitoring the implementation of the IDP.

2. **Research Governance at DDU**

The goal: Effective governance to facilitate research activities at DDU

The plan: To put in place Research and Development cell (RDC) as per the UGC notification

The activates under taken:

DDU has established Research and Development cell (RDC) as per the UGC notification dated 04/03/2022. The structure of RDC at DDU is presented in Figure R1. The RDC would help creating a research ecosystem for reliable, impactful, and sustained research output. The essential elements of such an ecosystem, viz., generation of knowledge and facilitation of research, innovation and technology development for industrial & societal benefits, are addressed by human resource, intellectual capital, governance and financial resources.

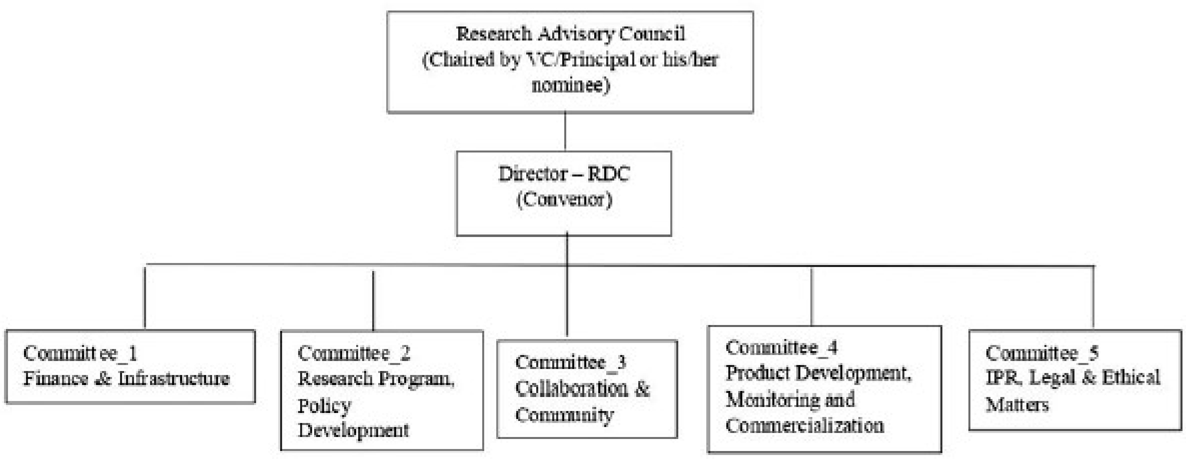

Figure R1: Structure of Research and Development Cell at DDU

Dedicated leadership and administrative structure for research, led by experienced researchers, is notified for establishing an effective and robust Research Governance at DDU. DDU plans to provide necessary infrastructure and man power for R& D activities.

3. **Research Eco system and Collaboration**

The Goal : Quality Research outcomes with the involvement of faculty members, Research organization, Industries and Government

The Plan : To Build sustainable research ecosystem at DDU

3.1 Research Eco system at DDU

To build a sustainable research ecosystem that leads to consistent quality research outcomes and enhanced productivity DDU is planning the following measures.

1) DDU has well defined and published **research policy**. The research policy is updated time to time as per the national and global needs.
2) DDU has is known for its academic freedom with respect to selection of research topic selected by faculty members and research scholars. DDU is planning to **identify** / modify the **thrust areas of research** based on national/global needs and encourage research in these areas without compromising on the academic freedom of research scholars.
3) DDU is planning to **establish collaborations, partnerships**, and combined ventures for joint research activities through clustering institutions and organizations to facilitate the exchange of students, scholars, and faculty.
4) DDU is **reaching out** to key industry players, research organizations, institutions, associations, NGOs, government bodies to forge strategic partnerships.
5) Planning for **resource sharing** in content and infrastructure both within the university and among collaborative universities, funding agencies, industries and government.
6) Enhancing the number of qualified **faculty members and research scholars** at DDU in a systematic manner.
7) DDU encourages the collaborative research within the department, across the departments and faculties, and with other universities/colleges in state / India / abroad.
8) DDU provides seed money to each one of the young deserving faculty members. As of now 20% of young faculty members are provided with seed money for minor research projects. By the end of five years all deserving young faculty members will be provided with seed money.
9) DDU established centers of excellence in research in collaboration with government funding agencies like GUJCOST, CSIR, DST etc. center of excellence in catalysis, surface science and Nanotechnology center, Bosh Rexroth are excellent examples of these initiative. We are planning to strengthen these centers along with establishing new centers of excellences. Special emphasis will be given to establish centre of excellence in the areas in which DDU has strength.

10) DDU is developing the system to generate revenue through testing and analysis using advance instruments and use a portion of this revenue to pay for AMC of advanced instruments to keep advanced instruments/systems/equipment in well running conditions.

11) Faculty members are encouraged to generate revenue thorough research and consultancy

12) Students are having innovative ideas however lack of facilities to test their ideas causes wastage of intellectual capital. To address this issue university is planning to develop idea lab under the frame work of research and development center.

13) University is also planning to encourage inter disciplinary research by developing research park as envisaged in its research policy.

Elaborate plan to implement above mentioned measures are presented in the following sections of this report.

3.2 Research collaboration and Networking

Industry institute interaction along with collaboration among university and research organizations is need of the hour. Result oriented research and commercialization of research outcomes is desirable. DDU closely works with industry, students are undergoing industrial training entire final semester for last three decades. University has undertaken collaborative research projects in the past. University is further planning to strengthen these collaborative research activities in coming five years. Identification of industrial problems and finding the solutions for the same is fundamental principle of various efforts in this direction. University is planning undertake 1) industry sponsored research projects 2) Interdisciplinary research.

1) **Industry Sponsored Research Projects:** University undertakes research projects sponsored Industry where faculty members who are having expertise in the given area and experts from the industry work together. Research scholars of the university also work on the projects who are perusing PG or PhD at university. The outcome of the research shall be shared by the university and industry based on the MOU sighed before initializing the project. This is expected 1) improve the exposure of the faculty members to industrial problems 2) industry gets solutions to persisting problems of the industry 3) research scholars gets financial support during the project and improve the scholars employability.

2) **Interdisciplinary Research**

Some of pressing industrial problems is interdisciplinary in nature. Inter disciplinary research is existing at DDU. Some of the excellent examples are research in the area of Pharmacy and nano-technology, environmental engineering and chemical engineering, instrumentation and control and chemical engineering. Dental sciences and Surface science etc. Bottom line of these interdisciplinary research is single researcher may not be having all necessary expertise. Interdisciplinary research brings research scholars together and works together. Various steps are taken are 1) to identify the interdisciplinary area 2) Identify the different experts from concerned disciplines who can work together 3) identify infrastructure to conduct interdisciplinary research.

3.3 Proposed "Multidisciplinary Research Center" (MDRC)

The vision of proposed Center of Excellence is to boost the multidisciplinary research in the state of Gujarat. Multidisciplinary research is the key component in the NEP 2020 and for the sustainable development of the nation in the different area of Science and Technology. The proposed center is providing world class infrastructure and caters the need of research community for the coming decade in terms of technology. As such DDU is having its own R & D Center and Center for Surface Science and Nanotechology to aim the multidisciplinary research since last 15 years. The existing centers are served excellent in the area of Surface science, Nanotechnology, Chemical Engineering and Catalysis, Pharmacy, Electronics and Communications etc. As an outcome of the existing centers, more than 25 major and minor research projects were carried out sponsored by various funding agencies and Industries. More than 60 international publications are the outcome of hard work of research scholars and able guidance of faculty members. Due to rapid change in technology worldwide, The existing facility is needed to upgrade to march towards the "Atamanirbhar Bharat" in coming decade. By keeping the eye on Sustainable state and nation at large , DDU propose the said "Multidisciplinary Research Center" as a state model of Center of Excellence. At present, There is no such kind of Center is available under one roof to solve the industrial problems.

The objectives of the MDRC is

- To boost the research in the area of Chemical Technology, nanocatalysis, Climate Change, Environmental Engineering

- To boost the research in the area of Internet of Things, Machine Learning, AI and Drone Technology, Semiconducting materials, Image processing
- To boost the research in the field of clean and green energy, smart cities…
- To boost the research in the field of Pharmaceutical, Medical and Dental Sciences
- To invite reputed Scientists and international students for research
- To help government in the policy making of future development in the area of Science and Technology

The proposed Center will helps the small, medium and large scale industries of the state and nation to address their real time problems and encourage the students to complete their Masters/Ph.D. work under sponsored research projects in the field of upcoming technologies. The researchers of various field will highly benefitted through such kind of Center.

The proposed multi floor center is having requirement of 12000 sq ft of construction area to do the multidisciplinary research work in the field of Applied Science and Technology. Accomodation and hostel facility of approx. 20000 sq ft will be provided to Staff and research scholars.

Table I. Infrastructure to be developed for MDRC

Sr No.	Description	Proposed Area (sq ft)
1	Central Analytical facility and Synthesis Lab	3500
2	Design and Simulation Lab	2000
3	Artificial Intelligence and Machine Learning Lab	2000
4	Smart Computing Laboratory (for Hardware and software)	2500
	ICT enabled Class room cum conference room for 30 Research Scholars (2 Nos.)	1000
5	Seminar Hall (Capacity 100)	3000
6	Multimedia Hall (Capacity 300)	6000

7	Administrative Office Area	1500
8	Hostel/Accommodation facility for Research students and staff	20000

The approximate cost to set up the building of MDRC including man power is **Rs. 16,00,00,000**

a. Research collaborations and MOU's

The university in the interest of the academic delivery system, creation of the academic ambience and atmosphere and to give full exposure to the different development of Science, Technology and also in the other fields and conducting relevant research, the university may have different kind of MOUs or agreement with other institutes of higher learning, universities, industries and other institutes of research which have similar or partial object on the line with objects of the Dharmsinh Desai University. Such kind of MOU/agreement for collaboration and co-operation will be with the approval of the Vice Chancellor. However, whenever such kind of co-operation and collaboration is undertaken with any such institute and there is financial implication on the part of the University then, such kind of MOUs with regard to such collaboration and co-operation will be evaluated and approved by the Finance Committee and also with the approval of the Board of Governors. Such co-operation and collaboration may also be for the purpose of internship, training, joint research, joint conferences, extension activities, on line education through virtual class room, continuing education programs, utilizing the academic infrastructure of other institutes, laboratories, etc.

Such collaboration and co-operation may also be with other universities or institutes outside India subject to the norms as prescribed by the University Grant Commission and the concerned department of the Government of India.

Such collaboration and co-operation will solely for the purpose of enhancement of knowledge and give exposure to the students and the teachers and will not be in any case to give any kind of financial benefit to any other company or institute. Whenever, such kind of collaboration and co-operation is dealt with the industry or similar kind of organization for the purpose of consultancy, then cost involved in the terms of utilizing the infrastructure of the university and the institute in terms of laboratory, electricity, library, equipment and such other things will have to be taken into consideration while deciding consultancy charges besides the cost for intellectual property utilized by the teachers and the scientists concerned and also the cost of administration and management charges to be determined to be paid to the university.

If in such consultancy, the teachers are involved then the teachers will be given their share from the consultancy charges received from such industry in an appropriate portion of such income as to be decided by the Board of Governor. If any pattern is to be evolved through such consultancy, then appropriate terms may be decided including sharing of profit if the pattern is commercialized.

In addition to the consultancy, the different institutes of the university may conduct different kind of training program for outside agencies concerned and also for industries. When such training program is conducted, a Memorandum Of Understanding will be entered into, where following matters shall be imbibed:

The training charges are to be paid by the external agencies or industries for each of such training program. While deciding such cost, the following aspects are to be taken into consideration:

i. The infrastructure to be used i.e. building or laboratory, classroom, seminar hall or auditorium, furniture, computer, audio-video aids, etc.
ii. The cost of remuneration to be paid to trainer.
iii. The management charges to be decided by the Vice Chancellor from time to time depending upon the nature of training.
iv. The over-head charges which will include electricity consumption, clerical assistance, telephone charges, maintenance cost of different infrastructure, etc.
v. The components of reasonable surplus which shall be decided by the Vice Chancellor.

The above charges are for the training programs which are arranged on the campus of the university. However, if the training is to be given on the site of the outside agencies or industries then the entire structure of the cost will be decided on merit of the individual case by the Vice Chancellor.

Such MOU/Agreement will be signed by the Registrar of the University if such MOU/agreement relates to the entire University or if it relates to the Faculty/Institute concerned then the Dean of the Faculty/institution concerned will sign such document. Such signature will be signed with the approval of the Vice Chancellor. If MOU relates to the department then the head of the department concerned will sign such document. Such signature will be signed with the approval of the dean concerned and Vice Chancellor.

Some of the faculties and university departments have signed MOU's with industry organizations. For example MCA Department has done MoUs with Infopercept Consulting Pvt. Ltd. and Cimkon Infotech Pvt. Ltd. for exchange of research work as well as other activities where students are the ultimate beneficiaries. DDU is planning to sign more such MOU's in coming decade and the projected plan is presented in the table given below.

Target number of MOU's planned to be signed and working during the coming decade by each faculty of DD Univeristy

Sno	Faculty	Industry	Government	Institutes	Foreign	Total
1	FOP	5	3	2	2	10
2	FOD	5	2	3	2	10
3	FOMIS	5	3	2	2	10
4	NDD	5	2	3	2	10
5	FOT	48	24	19	19	89
6	FOC	1	0	1	0	2
7	Total	69	34	30	27	131

Target number of active MOU's planned to be signed during the coming decade by each department of faculty technology of DD University.

Sno	Department	Industry	Government	Institutes	Foreign	Total
1	IT	8	4	3	3	15
2	MH	8	4	3	3	15
3	CE	8	4	3	3	15
4	EC	8	4	3	3	15
5	CH	8	4	3	3	15
6	CL	4	2	2	2	7
7	IC	4	2	2	2	7
8	Total	48	24	19	19	89

3.4 Student innovation eco system: Startups in an economy's technology sectors is an important indicator of technological performance for several reasons. Towards this goal, Government of Gujarat has developed Student Startup & Innovation Policy (SSIP) to promote and support startups and innovations from young students. This policy aims to create integrated, state-wide, university-based innovation ecosystem to support innovations and ideas of young students and provide a conducive environment for optimum harnessing of their creative pursuit.

Dharmsinh Desai University is selected as SSIP center by Gujarat Government in the year 2018 to support and mentor to innovators. Through this scheme, students can get support for funding for prototyping and testing, mentoring, Intellectual Property Right (IPR) process, and infrastructure facilities of the University to convert ideas to Proof-of-Concepts (PoC)/Prototypes/Patents and finally turn into a start ups. Grant can also be utilized to sensitize the students to take up the start up activities and implement their innovative ideas.

Once the SSIP1.0 is over, GoG has launched SSIP2.0 in year 2022 and DDU is again considered under it. As per the SSIP, Government of Gujarat provides 50% of the grant and equal amount is to be provided by the university as Grantee Matching Fund (GMF). Accordingly following amount is till date received by DDU SSIP cell.

SSIP Funding:

SSIP1.0: 10,10,000/- (5,10,000/- by GoG + 5,00,000/- by University as GMF)

SSIP2.0: 10,00,000/- (5,00,000/- by GoG + 5,00,000/- by University as GMF)

Incubation Process

Eligibility: Any student of Dharmsinh Desai University and alumni up to 5 years

Proposal Submission: Interested applicants are required to submit the application round the year.

Selection Process:

Scrutiny of submitted applications are carried out through presentation. The following points are considered for the selection: Innovation Component, Technical Features, Team's technical skills, Creativity, Market Potential, and Sustainability.

Impact of SSIP:

i. No of Proof of Concepts / Prototypes supported: 29

ii. No. of IPRs activities: 5

iii. No. of Start-ups supported:1

iv. Details of sensitization programs conducted so far:

More than 25 workshops/seminars/events organized to encourage students to come up with idea and demonstrate it using the grant during SSIP1.0 in Dharmsinh Desai University. Students from Engineering, Pharmacy, Dental Science, Management, Computer Applications etc are sensitized and motivated for startup activities. The programs were conducted by experts recognized by SSIP, Gujarat and eminent faculty members of our university.

v. Details of SSIP related other activities:

- Organized workshops/seminars/conferences based on recent innovations, IPR etc in related field
- Organized oral/poster presentation events and motivated students to participate in similar events outside the university.
- Organized interaction with industry personals as well as start-up founders
- Arranged visit to research centers/incubation centers/F&D/R&D/Manufacturing units to find real-time issues of industry
- Brainstorming carried out time to time with students for novel ideas and use cases in the upcoming areas of research such as AI, IoT etc in their respective domain.

In SSIP1.0, Students have successfully completed their projects and developed prototypes to demonstrate their ideas. Students participated and performed well in state level Hackathone and various poster presentation events related to innovation and secured awards

A student established start-up and became entrepreneur

DDU SSIP Cell has planned for Innovations and start ups as follows

Detailed Action Plan for the next FIVE years:

Sr.	Milestone	2022-23	2023-24	2024-25	2025-26	2026-27	Total

No.							
1	Total Number of Students to be Outreached and Sensitized	5000	5000	5000	5000	5000	**25000**
2	Total Number Innovations to be Supported at PoC Stage	50	50	50	50	50	**250**
3	Total Number of IPR to be Filed	5	10	10	10	10	**45**
4	Total Number of Student Start-ups	2	5	10	10	10	**37**
5	Total Number of Workshops/Conferences/Seminars/Capacity Building Programs in SSIP 2.0 Agenda	25	25	25	25	25	**125**

Proposed budget including University/Institute contribution, SSIP2.0 Grant and other sources: (in Rupees)

Sr.	Intervention	2022-23	2023-24	2024-25	2025-26	2026-27	Total
1	PoCs / Prototype / Innovation	1200000	1200000	1200000	1200000	1200000	6000000
2	IP Filing	500000	500000	500000	500000	500000	2500000
3	Tinkering lab development, infrastructure, administration, and others.	300000	300000	300000	300000	300000	1500000
	Total	**2000000**	**2000000**	**2000000**	**2000000**	**2000000**	**10000000**

Working on the above plan, The SSIP cell invited 45 proposals from the innovators in December 2022. SSIP cell received proposals from across the faculties of the university. As per the scrutiny committee recommendations, total 32 projects worth **Rs. 9,00,000/-** are sanctioned at PoC/prototype development level.

4 Human resources

The Goal : Upskilling of faculty members with PhD and Post docs

The Plan : Encourage faculty members for higher studies through incentive policy in line with UGC and NEP 2020

Faculty development: Faculty members are important component of research at any research. At present around 15% of faculty members are holding PhD degree. Improving the qualification of teaching faculty is of highest priority of the university. In coming five years DDU would like to improve this percentage to beyond 60%. In coming 10 years almost all faculty members of DDU must hold PhD degree. However, it is necessary sustain the research work at university. University seriously considering the Re-employing or designating superannuated faculty/scientists with exceptional research profiles and eminent faculty as Mentors/ Scientists/ Professor Emeritus on a selective basis to help to build a resilient research ecosystem. Distinguished faculties or research scientists grooming young talents can help replenish the void created as a result of superannuated faculty/researchers.

Research scholars (UG and PG level research)

Teaching and research go hand in hand as these two are vital in the process of generation and dissemination of the knowledge. At masters level research is encouraged as part of the curriculum. In the final year of PG program students under take research projects. These students are encouraged to publish and present the outcome the work. In addition to PG research projects DDU is planning to introduce minor and major research projects in pre-final year and final year respectively. UG students take guidance from the faculty members and work on the decided research work. End of the project a viva voce will be conducted similar to PG program. UG students are also encouraged to present and publish their research work with the help of faculty members.

PhD program

The steps towards doctoral programmes have already commenced long ago both for full-time scholars and external scholars. The University shall work to have collaboration with various prominent National institutions where they have requisite research infrastructures and also have expertise to guide the scholars in different areas. In pursuance to this need, the University should start recognizing prominent research institutions like Physical Research Laboratory (PRL), Indian Space Research Organization (ISRO), Indian Institute of Plasma Research (IPR), Reliance industries and the like.

Governance Model of Doctoral Programme: Based on the academic record and performance in the written test and interview, the guide will recommend the name of the candidate to the Institute for admission to the PhD programme. Candidates whose selection is approved by the Vice Chancellor will be admitted/registered to the programme. Application form, Detailed Admission Rules of Ph.D programme and Form for Guide Registration is available on the official website of D. D. University and can be downloaded from the site.

Postgraduate (full-time) degree with first class or equivalent from a university/Institute recognized by UGC/AICTE. Research proposals will also be considered for direct admission to PhD program for candidates having three years of experience as a full time teacher in a recognized college or of R&D work in a related discipline in a professional organization and also to have outstanding and well recognized research work in the related discipline.

A candidate who has qualified for the award of a relevant Master's Degree as per UGC, of a recognized University or Institution in a discipline related to the research proposal is eligible to apply for Ph.D. Programme of this University.

A candidate who has qualified for the award of Bachelor's Degree in Engineering/Technology/Pharmacy/Management with exceptionally good academic background and research work of repute in a discipline related to the research proposal is also eligible to apply for Ph.D. programme. The award of the Ph.D degree shall be in accordance with the regulations of this University.

The University shall admit the eligible doctoral students through an entrance test. It shall be followed by an interview to be organized by the University/respective department/ faculty level committees based on the recommendations from the research committee. At the time of interview, the doctoral candidates will be discussing their research interest area. The applicants qualified with a valid UGC/CSIR/JRF examination/SLET/NET/GATE/Teacher Fellowship holder shall be exempted from the test. The minimum passing percentage shall be fixed by the research committee for each subject in entrance test paper/s for his/her further admission process. The research committee may seek the opinion of the paper setter/evaluator in this regard.

Candidates must complete a minimum number of course works as prescribed by UGC to become eligible to register as Ph.D. students of the university. The Ph.D supervisor at his/her discretion may advise the candidate to complete more courses before registration. However, each candidate must complete two course works (6+6 credits 150 marks each) and one seminar (50 Marks) to become eligible for registration.

Candidates upon successful completion of course work shall be recommended by the supervisor for registration as PhD Student. The research progress committee will be formed for each candidate. The members of the committee will be identified by the university/internal research committee. The candidate needs to present his updated research proposal in consultation with the research supervisor before the RPC. Based on the evaluation report from the RPC university/internal research committee will recommend the candidate for registration as Phd student. Upon the recommendation of the research committee after the payment of prescribed fees the candidate will be registered as the Ph.D student of the University by the registrar of the University.

The student registered under a guide shall be monitored on continual basis through discussions, reports and presentations. The student shall also have to prepare a Planning Report at the start of every semester to pursue the research in consultation with the guide and the same is to be produced along with the progress report of the bygone semester to the University. There shall be a Research Progress Committee composed of at least three members including the guide to evaluate the progress of the candidate on continual basis.

The registration of a research student whose progress is not satisfactory in the opinion of the guide, or whose thesis is rejected by the external examiner/s or whose performance at the viva-voce exam is evaluated as not satisfactory by the external examiners or who has not enrolled in person for any one year shall be canceled administratively by the registrar.

The registration of a research student who has not submitted his/her thesis at least by the end of the extended period if any as provided in the regulations shall be canceled administratively by the programmer office.

A student can submit the research thesis at any time after the completion of the two years of research work from the date of registration but not later than five years from the date of registration. The University may extend a priory the period of submission of the thesis by not more than one year on valid reasons.

A student has to submit through the guide the synopsis of his thesis, confirming along with the title of the thesis, upon recommendation of the internal research committee. Synopsis shall be submitted at least two months before the last date for submission of the thesis.

Every Ph.D. candidate shall publish at least one research paper in refereed/peer reviewed journal, or more as per the Guide's directive to his/her credit; before appearing for the pre synopsis seminar and produce the Guide's certification in the matter along with the reprint of the paper/s. The student needs to be the lead author if the paper/s are published jointly.

A student will submit through the guide initially two soft bounded copies of thesis embodying the results of investigations, and an abstract of the thesis of around four hundred words within six months after the recommendation of the university/internal research committee. Students shall submit his thesis within two months from the date of submission of the synopsis. However, a request for grant of time beyond six months' period, if the student appeals with valid reasons, well before the prescribed due date can be reviewed by the guide and be sent for its approval to the research progress committee. This exemption will not be applicable beyond the last date of submission of the thesis. The student has to pay the term fees for the term in which the thesis is submitted. After the Ph.D. viva-voce, the student shall have to submit further two copies of the updated/revised/corrected thesis as directed by the examiners and the guide, within a week to the University.

The thesis submitted for the Ph.D. degree shall contain (also in a form of the statement) an account of the research work carried out by the student leading to the discovery of new facts or techniques or new correlation of facts already known (analytical and or experimental and or hardware oriented in nature), the work being of such quality that it makes a definite contribution to the advancement of knowledge. The student shall further forward a statement indicating the sources from which his information has been derived & the extent to which he has based his work on the work of others; and shall indicate which portion or portions of his/her thesis the student claims original.

A student will not be permitted to submit as his thesis, a thesis for which a degree has been conferred on him in this or any other university, but a student shall not be precluded from incorporating the work which he has already submitted for a degree in this or in any other university, in a thesis covering a wider field, provided that he/she shall indicate in a written statement accompanying the thesis any work which has been so incorporated.

There shall be a viva-voce examination of the student after the acceptance of his/her thesis by the external examiners for the degree of Ph.D., on the date or dates to be decided by the external examiner, the guide and the university jointly. Additionally, an observer nominated by the registrar upon the recommendation of the university research committee shall remain present at the viva-voce exam. The observer for PhD viva voce can be the same as RPC observer or can be a new person at the discretion of the university research committee. The viva-voice/defense process will be open to the departmental/interdisciplinary staff.

The university observer shall submit a joint evaluation report in prescribed format to the internal research committee through the registrar clearly stating that the performance of the student at the viva-voce exam is satisfactory or not. If the report is unanimous it shall be treated as final. In case of non-satisfactory performance, the university research committee may ask the student to re-appear for the oral examination after a period of not less than three months and not later than six months from the date of first viva-voce. This will be considered as a final viva-voce exam for the student.

The student may be asked to reappear for oral examination after a period of not less than three months and not later than six months from the date of first viva-voce. The re-Viva-voce will be conducted before panel of examiners at the discretion of the guide either before the same examiner or before the new board of the examiners by excluding the examiner who is not satisfied with the student's performance and by appointing a third external examiner out of the panel of examiners (from already submitted by the Guide).

If the performance of the student in the oral examination is reported satisfactory by all the examiners i. He/she will be given a provisional certificate by the registrar of the university in prescribed format. ii. He/she will be awarded a Ph.D. Degree, with the due consent of the Academic Council. iii. Upon the approval by the Academic council the registrar of the university will notify the award of the PhD degree to the candidate. However, the date of completion of the PhD degree by the candidate will be actual date of Viva-voce examination wherein candidate has successfully defended his/her thesis. The University reserves the right to withdraw the conferment of PhD degree under exceptional circumstances. Decision of the Academic Council will be final in this regard.

Table 2. PhD program as planned in coming 5 to 10 years at DDU

S No	Research outcome	Present status	Target (2023-28)	Target (2028-33)

1	Faculty with PhD	25%	65%	98%
2	Faculty recognized as PhD guide	23%	50%	90%
3	Average no active PhD students per recognized PhD guide	2	4	4

The University shall further boost doctoral research and earmark appropriate budgets for scholarship and research facilities in different institutions. It shall also recognize the worthy R&D organizations for doctoral research and build bridges with them. The University shall continue to encourage faculty and research scholars to get funding for attending International conferences from external agencies as a matching share so that the quality in research paper can be maintained. It shall urge research scholars to publish and patent their research work. For attending international conferences and allowing teachers to contribute papers, universities will also provide financial assistance subject to certain conditions.

As part of these efforts various departments started working towards strengthening of PhD program. Some of the efforts are as mentioned here. MBA department currently has a total of 11 students are registered for pursuing Ph.D. in the area of Finance, Marketing and Human Resource Management. There are a total 24 students who have completed their Ph.D. till now and they have been awarded the degree also. 2 Guides are currently registered in the department in the area of Marketing Management.

In the next five-year plan, The Department will try to encourage maximum students to pursue Ph.D. Department is expecting that around 35 more students will register for Ph.D. in the next five years. As of now all those who register as Ph.D. scholars will be given the task of completing their Ph.D. within a stipulated time period so that the department can register more students to pursue Ph.D. in the next five years. Department will make sure that more Ph.D. guides will be given responsibility, so that the department can contribute more number of Ph.D. students in the next five years. As of now the department will plan to give recognition to 5 more guides in the future.

In the second five-year plan, the Department will try to encourage maximum students to pursue Ph.D. Department is expecting that around 60 more students will register for Ph.D. in the next ten years. As of now all those who register as Ph.D. scholars will be given the task of completing their Ph.D. within a stipulated time period so that the department can register more students to pursue Ph.D. in the next ten years. Department will make sure that more Ph.D. guides will be given responsibility, so that the department can contribute more number of Ph.D. students in the next five years. As of now the department will plan to give recognition to 8 more guides in the future.

The department plans the following for enhancing the doctoral programme by Collaborative research with Industries and other academic institutions, Collaborative International Research and Governance model of Doctoral Programme.

For MCA Department currently one PhD Guide is registered in the department in the area of computer science. In the next five-year plan, The Department will try to encourage maximum students to pursue Ph.D. Department is expecting that around 10 students will register for Ph.D. in the next five years. Department will make sure that more Ph.D. guides will be given responsibility, so that the department can contribute more number of Ph.D. students in the next five years. As of now the department will plan to give recognition to 1 more guides in the future.

In the second five-year plan, the Department will try to encourage maximum students to pursue Ph.D. Department is expecting that around 10 more students will register for Ph.D. in the next five years. Department will make sure that more Ph.D. guides will be given responsibility, so that the department can contribute more number of Ph.D. students in the next five years. As of now the department will plan to give recognition to 1 more guides in the future.

The department plans the following for enhancing the doctoral programme by Collaborative research with Industries and other academic institutions, Collaborative International Research and Governance model of Doctoral Programme.

Collaborative research with Industries and other academic institutions**:** By looking at the demand from the industry and also from the perspective of students there will be very high requirements for the research. To meet the demand of the industry department will collaborate with more industries and institutions and will contribute with more power to build the good research outcome, so that the market will have greater benefit out of that research work which is done by the students and faculty members. Department is in the plan to collaborate with industry for the practical research work both for the students and faculties culminating into PhD.

MBA Department is in the plan to collaborate with National Institute of Security Market for the practical research work both for the students and faculties. Department also plans to collaborate with The Institute of Chartered Accountants of India, so that students and faculty members can get maximum exposure from the industry. MCA Department also plans to collaborate with various computing research associations, so that students and faculty members can get maximum exposure from the industry.

The MBA department has already collaborated with lots of industries like McDonald, D-Mart, Tata consultancy services etc.. for the research perspective. Students and faculty members of the department are regularly visiting these companies for the research work. Department also has done MoU with The Institute of Company Secretaries of India for exchange of research work as well as other students benefited activities. Similarly, on the basis of the expertise, experience gained and infrastructure of the R and D of prominent industries such as Cadila, Intas, Piramal and like for Ph.D. research.

Collaborative International Research

We live in a global village. Knowledge is being produced in different parts of the world. Collaborative international research is essential to facilitate mutual learning and expertise sharing. The University plans to have more MoUs with prominent research institutions in India and abroad for conducting research jointly in the areas of common interest which can be effective. For this purpose, a Task Force shall be constituted that will constantly explore the possibilities of having such collaborative or joint research in terms of thrust areas, decide the modus operandi of conducting such research and attend to other relevant aspects.

Development of mechanism for technology transfer: One of the important mandates of research and development cell at DDU is commercialization of the research outcome. A committee as mentioned in the research and development cell is formed to taken care of product development and commercialization aspects of research. This committee is expected to utilize already existing expertise within the University. For example FOP is a recognized Nodal Incubation Center by Industries Commisionarate, Government of Gujarat, whereas per Incubation guideline, Technology transfer mechanism is established.

RESEARCH AND INNOVATION INDEX

S No		Present Rating	Target rating (23-28)	Target rating (23-33)
1	Per-faculty publications	satisfactory	Very good	Excellent
2	Cumulative Impact Factor of publication	satisfactory	Very good	Excellent
3	H Index of scholars	satisfactory	Very good	Excellent
4	% Of staff involved as principal researcher	poor	satisfactory	Very good
5	% Of research projects fully or more than 50% funded by external agencies, industries, etc.,	poor	satisfactory	Very good
6	Total no of patents granted % Of faculty receiving national/ international awards	poor	satisfactory	Very good
7	% of research income Doctoral degrees awarded per academic Staff	Poor	satisfactory	Very good
8	% Doctoral degrees in the total number of degrees awarded	Poor	satisfactory	Very good
9	% Expenditure on research and related Facilities Digitization of master's and Doctoral thesis UPE/CPE	Poor	satisfactory	Very good
10	% Of Income generated from non- grant Source	Good	Very Good	Excellent

5 Information management

The Goal : To create Information and Innovation Management system at DDU

The Plan:

DDU plays a key role in the advancement of research and innovation as two distinct entities through Research Information Management System (RIMS) for the benefit of faculty, students, industry and other stakeholders. DDU is planning to put in place a RIMS to collect and manage research-oriented information, databases, publications, research projects, fellowships, collaborations, patents, thrust areas, innovations etc. aligned with the institution's research policies.

RIMS would also provide a platform for accessing resource-centric information pertaining to human capital (Expertise), physical capital (State- of-Art Research Laboratories and Sophisticated Instrumentation Facility), and knowledge capital (Digital Library & Information, Intellectual Property Facilitation, Quantitative Methods & Data Analysis, Analytical and Consultancy Services).

As per the requirements of various regulatory agencies, researchers can submit, modify, or update their research compliances such as protocol approval, training records, equipment lists, etc. RIMS shall provide a centralized and integrated database to manage issues related to and radioactive-safety approval clearances for use and disposal of biological, chemical and radioactive hazardous materials, protective equipment measures, surveillance of staff, appropriate trainings/workshops, etc.

DDU is planning to create a blog or portal for Institutional Research Information and Institutional Repository and has already signed an MoU with UGC- INFLIBNET to access and upload the research information through Shodh Ganga, Shodh Gangotri, Shodh Sindhu, Shodh Shuddhi, and Shodh Chakra.

Upload status of research present status and future plan

S No	Research outcome	Present status	Target (2023-28)	Target (2028-33)
1	PhD thesis	80%	100%	100%
2	Master’s thesis	0%	100%	100%
3	UG research outcome	0%	100%	100%

Innovation Management System (ISO56002:2019)

University is also planning to implement the Innovation Management System (ISO 56002:2019) as a common framework in coming five years to develop and deploy innovation capabilities, evaluate performance, and achieve intended outcomes of global standards.

Potential expected benefits of this system at the university are a) improved sustainability and resilience; b) increased satisfaction of users, customers, citizens, and other interested parties; c) sustained renewal of the portfolio of offerings; d) engaged and empowered people in the organization; e) increased ability to attract partners, collaborators, and funding; f) enhanced reputation and valuation of the organization; g) increased ability to manage uncertainty; h) increased growth, revenues, profitability, and competitiveness; i) reduced costs and waste, and increased productivity and resource efficiency; j) facilitated compliance with regulations and other relevant requirements

The following principles are the foundation of the proposed innovation management system at DDU a) realization of value; b) future-focused leaders; c) strategic direction; d) culture; e) exploiting insights; f) managing uncertainty; and g) adaptability;

As first step in this direction university will establish innovation policy and communicate the same to all stake holders with in first five years. **DDU** management shall establish, implement, and maintain an innovation policy, ensuring that it: a) is describing the commitment to innovation activities; b) is appropriate to the purpose and context of the organization and supports its strategic direction, in alignment with the innovation vision; c) provides a framework for setting innovation strategy and objectives; d) takes into consideration the innovation management principles; e) includes a commitment to satisfy applicable requirements and to consider ethical and sustainability aspects; f) includes a commitment to continual improvement of the innovation management system.

Once the draft policy is ready it will be discussed with all stake holders and finalize the policy through consultations. The final policy adapted by the management will be made a) available as documented information; b) communicated, understood, and applied, within the organization; c) available to relevant interested parties, as appropriate. The ISO 56002-2019 management system will be implemented and audited with in coming 7-8 years.

6. Research Promotion and Guidance

The Goal:

The Plan:

Research promotion activities at DDU are planned to be aligned with the mandates of various National Missions, SDGs, Start-up India leading to a Self-Reliant India (Atma-Nirbhar Bharat). Research Guidance from RDC will aim to encourage faculties to conceive ideas through enhanced industry-academia interactions and prepare research proposals for funding from various agencies. DDU has planned to organize events like capacity- building programs (Research Methodology and Research Techniques) and specific research theme-based workshops and Research Internships to motivate students, scholars, and faculties to participate actively in the process of ideation and innovative research in emerging areas.

Identification of research thrust and clustered areas

DDU believes in academic freedom and encourages faculty members to choose their own area of research. It is also equally important to conduct research which is useful for the local industry needs and global technology development. The university is in the process of identifying thrust areas of national and global importance based on the need of the hour. Listing out topics which are relevant makes an exhaustive list covering vast variety of areas. This will help young researchers to select suitable topic, The University advises and encourages its faculty members to identify majority of topics from the bank of topics identified. While preparing these back of topics a special emphasis given to topics of inter disciplinary and multi disciplinary in nature. Faculty members are also allowed to pic up some of the topics as minor research project to prepare proposals to be submitted to funding agencies. Such bank of topics also may include industry sponsored projects.

Thrust areas for research in at DDU shall be identified, underpinning the societal needs and the availability of key resources, including in-house human resources, faculty research competencies, and support systems. This is expected to help the university in establishing a Center of Excellence (CoE) in these identified contemporary areas of research. Research Clusters and/or Regional Research Consortia prompted/formed by RDC to bring all researchers, faculty, students, scholars, and Post-Doctoral Fellows for joint high value (interdisciplinary and trans-disciplinary) research projects to avail national and international funding opportunities. Shared infrastructure and expertise will enable cross fertilization of ideas and mobilization of resources. Further, forming Regional Research Consortia adds a synergistic advantage in finding solutions in inter-disciplinary, trans disciplinary, and multidisciplinary areas.

CoEs' can serve as Incubation Centres to transform innovative ideas into processes and products administered and monitored by the proposed RDC. RDC could also provide an avenue for local community talent with prior learning/expertise to engage in research and innovation activities of DDU

Research incentives and recognition

It is known that incentives play a significant role in triggering and catalyzing research interest among scholars and faculties. Incentivizing quality publications and patents by students and faculty will have an enduring positive impact.

Institution of Excellence Awards for accomplishments/achievements in the form of impactful quality research and/ or research-based teaching will further stimulate and invigorate the research and innovation activities. DDU is developing develop a policy focusing on identifying specific intensives for research faculty and develop a unique Research Career ladder for strengthening the mission "Research". This policy will be implemented in coming five years. Incentives under serious consideration in this regard are

1) in terms of increments to faculty members
2) awards and prizes for faculty as well as students
3) in terms of providing more funding for ongoing research
4) Presenting a certificate of recognition which will have some weightage for the career advancement scheme.

Technology development and Business Centered facility

One of the important verticals of research and development cell at DDU is development of Technology Development and business-centered facility which will be a hub for strategic partnerships/ collaborations, industry-institute interface, sponsored or contract research, new knowledge generation, IPR, and patent services, venture capital, trade/market portfolio, technology transfer, and commercialization of research to facilitate innovation, incubation, entrepreneurship and start-up ventures. Significant developments are expected from this vertical in coming decade.

Finance

RDC at DDU is has one more vertical to facilitate resource mobilization and create a Corpus for research and development from government, industry, and other funding agencies and channelize Corporate Social Responsibility (CSR) funds for sustainance and furtherance of research activities. Apart from creating a Corpus fund exclusively for R&D, RDC can explore venture capitalists and angel investors for funding in research and innovation. It needs to liaise with funding agencies, and track funding opportunities from industrial consortia. The university is planning to make exclusive provision for research in the annual budget subject to the availability of funds. The corpus created for research is used for the seed funding for freshly recruited faculty for developing research facilities, publications and patenting.

Seed money for minor research projects

DDU encourages faculty members to conduct research. However research requires funding. Funding agencies look at background of principle investigator in terms of projects already executed and number of publications he has. It becomes a vicious cycle which has to be broken at the very early stage of faculty member's career. DDU has started providing seed money for its young faculty members especially for Assistant professors to start research. Well defined procedure is laid down in the form of guidelines for minor research project. As part of this procedure faculty members submit their proposal to the head of the department. A committee is formed consisting of head of the respective department, Dean of respective faculty and two senior faculty members at a level of professor to evaluate the research proposal. Once approved by the committee the project will be recommended for funding. Every year around 20% of faculty members at assistant professor level will be provided with the seed money. These projects are evaluated every four months for their progress. Remaining amount will be released after the recommendation of the evaluation committee. This scheme makes all faculty members of the university to execute at least one research project in coming five years.

Table.R.4. Beneficiaries of the minor research projects for the current academic year

S.No	Name of the principal investigator	Amount Sanctioned	Project Starting date
1	Dr Jagat Upadhyay	92000	06/12/2022
2	Dr Kishor Sorathia	90000	06/12/2022
3	Dr Punit Bhatt	88000	06/12/2022
4	Dr Mansi Dholakia	94000	06/12/2022
5	Ms Dinal V Patel	92000	06/12/2022
6	Mr Vashisth Bhavsar	94000	06/12/2022
7	Dr Gopi Shah	86000	06/12/2022
8	Mr Shital Padhiyar	86000	06/12/2022
9	Ms Janee Christian	80000	06/12/2022
10	Mr A J Gondaliya	97200	06/12/2022
11	Dr Yash Jaiswal	50000	06/12/2022
12	Dr Hemant Kumar	50000	06/12/2022
13	Mr Ved Tripati	40000	06/12/2022
14	Mr Niraj Nair	50000	06/12/2022

15	Mr S C Modi	25000	06/12/2022
16	Mr Jaydeep Jivani	55000	06/12/2022
17	Dr Krishna Chowhan	30000	06/12/2022
18	Mr Dhrumil Gandhi	80000	06/12/2022
19	Dr Bhupendra suryawamsi	25000	06/12/2022
20	Mr Hitesh N Panchal	25000	06/12/2022
21	Dr Hardik Shah	22000	06/12/2022
22	Mr. Pooja Shah	22000	06/12/2022
23	Mr. Mansi Rathod	22000	06/12/2022
24	Mr. Divyesh Patel	22000	06/12/2022
25	Mr. Agnaya Patel	22000	06/12/2022
26	Dr Meghna Jani	36800	06/12/2022
27	Dr Hirak Patel	100000	06/12/2022
28	Dr Palak Mehta	100000	06/12/2022
29	Dr Ronak Patel	90000	06/12/2022
30	Dr Yash Shah	40000	06/12/2022
31	Dr Naman Vaidya	90000	06/12/2022
32	Total	18,98,000	

Major research projects

Major research projects requires substantial amount of funding and infrastructure. DDU encourages senior faculty members to write proposals and submit them to funding agencies at national and international level. It is also possible to taken up projects in collaboration with industry. All such proposals shall be scrutinized by departmental team if the proposal is related to specific field of research. Interdisciplinary research proposals shall be scrutinized by the team of senior faculty before submission. However, main objective of this scrutiny is intended to improve the quality of proposals presentation.

The university appointed team monitors the progress of such proposals. During this evaluation process special emphasis will be given to the budgetary allocation and its utilization. Once the project is completed the principle investigator has to submit the utilization certificate to the funding agency and obtain the project completion certificate. DDU encourages all senior faculty members to submit proposals. Total number of project proposals to be submitted in coming decade is approximately 100. It amounts to be at least one proposal by every faculty member at the level of associate professor and professor.

Some of major Research Projects Completed/Ongoing at DDU

Sno	Title	Sanctioned Amount	Name of Funding Agency
1	Design & development of hardware module for the phase & power measurement for 64 channels of LHCD	₹ 24,06,900	Dept. of Atomic Energy, Govt. of India
2	FinFET based SRAM Cell Design	₹ 7,30,000	Gujarat Council on Science and Technology(GUJCOST), Govt. of Gujarat
3	Modeling and Prediction for Control of Plasma Disruptions in Tokamak using Machine Learning	₹ 29,30,100	Dept. of Atomic Energy, Govt. of India

Table: Major Research Projects with department of chemical engineering of faculty of technology through Anchor Institute& SSNT (Completed/Ongoing)

Sr.No.	Activities*	Head	Duration	Revenue	Remarks
1	Anchor Institute	Extension Program	4 years	Rs. 10 crores from Govt. of Gujarat	Imparting manpower training programs to enhance technical skill level in chemical & petrochemical sector in state of Gujarat
2	Center for Surface Science and Nanotechnology	Centre of Excellence	Starting March 2009	Rs. 3.5 crore from Govt. of Gujarat	R&D and consulting in surface science and nanotechnology
3	Community Polytechnic Programs	Extension Program	Starting September 2010	Rs. 71 lakhs, Rs. 20 lakhs capital and three years Rs. 17 lakhs each recurring expenses	Imparting technical courses in agriculture, fertilizers, insecticides, environmental pollution control, etc.

4	M.Tech program in Chemical Engineering – specialization in surface science and nanotechnology	New M.Tech program under Innovative Schemes of UGC	Starting July 2010	Rs. 45.5 lakhs for five years	Imparting M.Tech education in chemical engineering with specialization in surface science and nanotechnology
5	Center for Excellence in Nanocatalysis – Development and Applications	Centre for Excellence R&D program	Starting March 2009	Rs. 28.5 lakhs for three years	Establish centre of excellence in nanotechnology under GUJCOST
6	Young Scientist Award to Dr. Manish Mishra	R&D project	Starting May 2010	Rs. 20 lakhs for three years	Solid acid and base catalyzed reactions R&D project under Department of Science & Technology, New Delhi
7	GSFC Science Foundation R&D Award	R&D Project	Starting January 2010	Rs. 10.27 lakhs for three years	Nanotechnology to provide clean drinking water in developing nations: Poor Man's Filter.
8	Newraka Chemicals	R&D Project	Starting September 2009	Rs. 5 lakhs	Applications of iron oxide catalyst for green technologies
9	DST-FIST Grant	R&D Projects	Starting July 2011	Rs. 48 lakhs	Environmental treatablity set-up, MIMO system, software and computers, lab renovation, balances
10	Industry Founding Members of Center for Surface Science & nanotechnology	Consulting	Starting July 2010	Rs 1.5 crore	Founding members fee
11	Hi-Shine Inks	R&D projects	2011-2014	Rs. 5 lakhs	Ink product development
12	Leo Lens	R&D Project	2012-2015	Rs. 8 lakhs	Contact lens development and drug-delivery

13	Asian Paints	R&D Projects	2013-15	Rs. 8 lakhs	New paint products and technologies
14	GPCB	R&D	2018-2019	10,00,000/-	Photocatalytic Advanced Oxidation Process for Waste Water Treaatment

The details of major/minor research projects for FoP,FoD and FoT is given in Annexure II.

7. **Integrity and ethics**

The Goal : To incorporate integrity and ethics in Research

The Plan : To make DDU policy/streatgy to boost the integrity and ethics in research

The university believes in Integrity and ethics as basic pillars of human life. It thrives to produce good and responsible citizens apart from making them good professionals through necessary training. Occurrence of misconduct is a threat for basic principles of research. University defines research misconduct as any fabrication falsification or plagiarism in proposing, performing or reviewing research or in reporting of research results. Misconduct in research damages the integrity of the profession and undermines the credibility of scholars. It is also unethical to the values the university which strives to maintain and promote.

The university takes all allegations of misconduct very seriously. In coming five years it shall ensure all the necessary procedures related to inquiry investigation and adjudication of any misconduct are well defined and just for all parties involved.

The university has put in place a robust system of plagiarism check in line with 1) UGC Gazette notification REGD NO D L- 33004/99 regarding University grants commission (promotion of Academic integrity and prevention of plagiarism in higher educational institutions) Regulations, 2018 dated 23 rd July 2018, 2) University grants commission Public notice on “self plagiarism” no N.F.I-1/2020(SECY) dated 20 th April 2020.

Statutory body of DDU ie. the academic council held on 27/04/21 has approved UGC notification dated 23/07/2018 to create awareness, to establish mechanisms to detect and prevent plagiarism. In this regard DDU has established the mechanism to fulfill above objectives.

DDU Vice chancellor has notified two level committees to do establish academic integrity at DDU. Departmental Academic Integrity panel and Institutional academic integrity panels are established as mentioned in UGC notifications.

Institutional academic integrity panel

a) Chairman: Vice chancellor of DDU.

b) Member: One of the members nominated by VC from of university research committee.

c) External member: Nominated by VC from outside DDU.

d) Member: Nominated by VC, person well versed with plagiarism tools

Departmental academic integrity panels

a) Chairman: Head of the department

b) Member: A person well versed with anti plagiarism tools

c) Member: One of the members nominated by VC

Conflict of interest: In case of conflict of interest for chairman of the DAIP or a member of IAIP has to exclude himself from the relevant committee. The authority to form the committee in case of Chairman recusing himself will be transferred to IAIP chairman. If any member of DAIP or IAIP has conflict of interest the chairman of the respective committee will induct a new member in place of recused member.

Mechanism followed:

1) Each master's thesis and doctoral thesis must be checked for plagiarism and certificate to that effect must be attached with the thesis at the time of submission for evaluation.

2) DAIP has to cross check the same at departmental level and forward the same to IAIP. Further procedure of evaluating the thesis will be done only after getting the consent from IAIP. Efforts at IAIP will be coordinated by IQAC.

3) In case of any complaint regarding plagiarism within the department all complaints are to be submitted to Chairman of DAIP. If DAIP chairman himself one of the accused or he has any conflict of interest then the complaint has to be submitted to IAIP directly.

The university uses two softwares to check plagiarism of any thesis/research output. One that is being used at departmental level is open and free soft ware available that is inflib net "Orginal" . DDU has purchased "turnitin" similarity check software to perform similarity check at the institute level.

With the above mechanism in place DDU is planning to achieve 100% plagiarism check of all the research work that is produced from our university as per the table given below.

Plagiarism check status and future plan

S No	Research outcome	Present status	Target (2023-28)	Target (2028-33)

1	PhD thesis	100%	100%	100%
2	Master's thesis	60%	100%	100%
3	Technical papers	30%	100%	100%
4	UG students	0%	100%	100%

Institution's Innovation Council:

Ministry of Human Resource Development (MHRD), Govt. of India has established 'MHRD's Innovation Cell (MIC)' to systematically foster the culture of Innovation amongst all Higher Education Institutions (HEIs). The primary mandate of MIC is to encourage, inspire and nurture young students by supporting them to work with new ideas and transform them into prototypes while they are in formative years.

MIC has envisioned encouraging creation of 'Institution's Innovation Council (IICs)' across selected HEIs. A network of these IICs will be established to promote innovation in the Institution through multitudinous modes leading to an innovation promotion eco-system in the campuses. DDU is planning to establish its Institution's Innovation Council (IICs)

The major focus of DDU ICC is expected to be

- To create a vibrant local innovation ecosystem
- Start-up supporting Mechanism in HEIs
- Prepare institute for Atal Ranking of Institutions on Innovation Achievements Framework
- Establish Function Ecosystem for Scouting Ideas and Pre-incubation of Ideas
- Develop better Cognitive Ability for Technology Students

Functions of IIC at DDU are as follows:

- To conduct various innovation and entrepreneurship-related activities prescribed by Central MIC in time bound fashion
- Identify and reward innovations and share success stories
- Organize periodic workshops/ seminars/ interactions with entrepreneurs, investors, professionals and create a mentor pool for student innovators
- Network with peers and national entrepreneurship development organizations
- Create an Institution's Innovation portal to highlight innovative projects carried out by institution's faculty and students
- Organize Hackathons, idea competition, mini-challenges etc. with the involvement of industries

8. Capacity building

The university would play a crucial role in building the capacity of faculty and students to undertake research problems in line with the latest advances in diverse disciplines to push the boundaries of knowledge through publications and contribute to technological developments relevant to societal needs. It would also pave the way for DDU to attract more research grants under norm-based funding, improve its accreditation ranking and enhance its brand image.

Though the faculty members are eager to conduct research but the young faculty members due to lack of guidance and proper training do not have expertise to write a research proposal or having insufficient skills to channelize their efforts. This leads to rejection of research proposals. When researcher is not skilled enough to write paper then the paper gets rejected even though the quality of research outcome is good enough. Therefore DDU shall organize regular events such as refresher courses, workshops, trainings/internships, group discussions and seminars/conferences for capacity building. DDU would play a pivotal role in creating central R&D facilities with the provisioning of associated training/internship thereon.

Number of refresher courses, workshops, for capacity building

S No	The faculty	Target (2023-28)	Target (2028-33)
1	Technology	35	42
2	Management	15	18
3	Pharmacy	5	9
4	Medical sciences	5	10
5	Dental sciences	5	10
6	Commerce	5	8
7	Total per year	70	97

Number of seminars/conferences to be organized in coming decade at DDU

S No	The faculty	Target (2023-28)		Target (2028-33)	
		National	International	National	International
1	Technology	14	7	21	14
2	Management	6	1	9	2
3	Pharmacy	5	1	5	2
4	Medical sciences	5	2	10	3

5	Dental sciences	10	2	10	3
6	Commerce	3	0	3	2
7	Total per year	43	13	58	26

9. Research Monitoring

The Goal: To monitor the progress of Research activity at DDU

The Plan : Frame the policy for monitoring the progress of research work and projects

The current policy environment in India encourages universities to be responsible and accountable for research development and innovation activities through the creation of infrastructure, generation of resources, promotion of business, and facilitation of policy framework to nurture the culture of quality research by adhering to ethical practices. Among the standard functions, University needs to monitor and oversee research progress, coordinate program, manage and facilitate optimizing resources, timely review of research activities for completion of the projects as per schedule.

Number of review meetings per year to be organized to evaluate progress of research

S No	The faculty	Target (2023-28)		Target (2028-33)	
		Minor project	Major projects	Minor project	Major projects
1	Technology	140	70	140	70
2	Management	60	30	60	30
3	Pharmacy	20	10	20	10
4	Medical sciences	20	10	20	10
5	Dental sciences	20	10	20	10
6	Commerce	10	6	10	6
7	Total per year	270	136	270	136

DDU is planning to formulate and adhere to specific quality benchmarks for research to meet the global/ international standards. The RDC at DDU shall conduct a quality review (SWOC Analysis) or internal evaluation of the research papers and suggest Scopus Indexed, Web of Science (WoS), or UGC-CARE recognized journals for appropriate publications.

Target research outcome per year from each faculty of D D University

Sno	Faculty	Patents	Publications	Minor projects	External projects	Total Projects
1	FOP	3	16	4	5	9
2	FOD	8	50	15	18	33
3	FOMIS	3	15	4	5	9
4	NDD	16	50	25	35	60
5	FOT	30	150	43	53	96
6	FOC	0	5	2	2	4
7	Total	60	281	93	118	211

Target research outcome per year each department of faculty technology of DD University.

Sno	Department	Patents	Publications	Minor projects	External projects	Total Projects
1	IT	5	25	6	10	16
2	MH	5	25	6	10	16
3	CE	5	25	6	10	16
4	EC	5	25	6	10	16
5	CH	5	25	6	10	16
6	CL	3	15	3	5	8
7	IC	3	10	3	5	8
8	Total	30	150	36	60	96

Summary :

DDU is seeking for government fund to strengthen our research activity align with NEP 2020. The approximately Rs.16,00,00,000 is required to established multidisciplinary research center at DDU.

CHAPTER 4 Extra-Curricular and Extension Activities

1 Introduction:

Dharmsinh Desai University encourages students to be actively involved in extracurricular and extension activities. Since its inception, DDU's endeavour is to prepare students for leadership roles. The focus is not restricted only to academic activities but also emphasizes holistic development. DDU is socially committed and believes in enhancing the intimacy between the university and the community. It unites a community of students who share the same interest or passions.

The activities enhance a variety of soft skills, such as organization and interpersonal communication, empathetic qualities, creativity, and intellectual development, which results in gaining beyond domain-specific knowledge in students.

2 Sports and Cultural activities

The Dharmsinh Desai University provides a platform for the overall development of students. Sports and games are an essential part of an individual's life, contributing to enhancing the quality of life. Understanding the importance of sports, Dharmsinh Desai University promotes sports activities and ensures student participation. The university organizes inter-university and inter-college/department events that foster team spirit among the participants and make them disciplined.

Playing competitive sports has also proven to increase the rate of positive academic achievement among students. The dedicated sports department of Dharmsinh Desai University provides students with a plethora of opportunities to maintain a healthy & active lifestyle while pursuing academic goals. This dedication makes sports an integral part of the University's academic structure. Dharmsinh Desai University has many accolades to its credit both nationally & internationally.

The University is planning to its horizon in the coming decades. Next ten years there will be a special sports complex providing all the opportunities to participate in all the sports as well as maintain fitness.

3 Social and Extension activities

Dharmsinh Desai University has been at the forefront of reaching out to the community through extension and outreach activities. The Kheda District benefited from the medical college, which was the only COVID hospital in the district. There are many initiatives by the DDU like an oral cancer center, free Medical and Dental camps in the Kheda District, regular blood donation camps, several awareness rallies, and exhibitions, etc.

The Dharmsinh Desai University has received a certificate from the Guinness Book of Records for creating a world record in pleading Eye donation. A total of more than 8000 participants were involved in creating this record.

NSS is a crucial platform for social and extension activities. Every year around 400 students register for NSS and throughout the year conduct various activities in a nearby community for social welfare.

The University has adopted the village and all the department are actively playing their role in the overall development of the village. Dental camps are organized for the awareness and treatment of oral health. Medical camps are also organized. The Engineering, Management, and Pharmacy department also contribute to their role and helps the village for overall development.

The University also encourages the students to visit orphan houses, old-age homes, divyang schools, etc., and make them sensitized about these social issues

The University is planning to have specially designed internships, provisions in the syllabus, and timetable for the social and extension activities relevant to the curriculum. These will lead to making students responsible for society.

The National Service Scheme wing of the University and various clubs under it are as follows.

1. National Service Scheme
2. Spandan – Social Service
3. ECO Club – Environment Enrichment and Conservation
4. Decibels – Music Club
5. CREATIVITY CLUB
   5.1 Arts & Cultural Program
   5.2 Literature & Content Writing
   5.3 Digital poster making
   5.4 Poster Designing

SPANDAN – SOCIAL SERVICE

॥ स्पंदन ॥

Preamble:

Social inequality leads to unequal access to the benefits of belonging to any society. It is the collective responsibility of all human beings to work for other individuals for the benefit of the community that will inherit the world that the individual leaves behind. Spandan offers social support and resources for vulnerable individuals and oppressed groups.

Objectives and Functions:

Spandan at Dharmsinh Desai University is devoted to providing services intended to aid disadvantaged, distressed, or vulnerable persons or groups. Spandan offers welfare programs to address the needs of society.

Major Activities

i. Distribution Programs for needy

ii. Visit Old Age Home and Orphanage

iii. Develop a Sense of Social Responsibility

iv. Social Inequality Awareness

ECO CLUB – ENVIRONMENT ENRICHMENT AND CONSERVATION

Preamble:

Eco Club at Dharmsinh Desai University considers nature as our part of the whole. Environment plays an important role in healthy living and the existence of life on planet earth and all are dependent on it for food, air, water, and other needs. The eco club focuses on maintaining the important elements of the environment gifted by the nature. It aims to reduce the impact of human activities on the earth and its various inhabitants.

Objectives and Functions:

The major objective of the Eco club is to educate, encourage, and lead toward the conservation of nature. Furthermore, the Eco club endeavors to create a natural, holistic, student-centered learning environment that inspire the students to be creative, innovative, and eco-friendly decision-makers.

Major Activities:

i. Propagate Environmental Awareness
ii. Environmental Protection
iii. Best out of Waste
iv. Creative Eco-friendly Activities

DECIBELS-MUSIC CLUB

Preamble:

Music is a divine art that is entertaining as well as beneficial for – singers, musicians, and listeners. Decibel, the music club of Dharmsinh Desai University is where one can practice, perform, and grow. Decibel music club recognizes musical talent and encourages showcasing musical skills.

Objectives and Functions:

Music is an effective tool for relaxation and stress management. The major objectives of the Decibel club are to increase love for music, overcome stage fear, boost confidence, inculcate teamwork, enhance the presence of the mind, develop pressure handling, and help stress relaxation. It gives an opportunity for students to come together to discuss music. It gives them a chance to perform and showcase their talents at events.

Major Activities:

i. Instrumental and Vocal Group Activities
ii. Musical Events
iii. Practice Session
iv. Musical Session
v. Jamming Session

CREATIVITY CLUB

Preamble:

The creativity club at Dharmsinh Desai University plays an important role in innovation. It promotes students' internal motivation for personal and group creativity skills and the use of the right ideas and strategies.

It enhances the skills to develop new ideas or adapt existing objects to meet new demands. It helps students in divergent thinking. The club encourages performances or displays of artistic expression, brings students together to create social solidarity and cohesion, community empowerment, and enhances confidence.

Objectives and Functions:

The goal of the club is to develop creative thinking skills. It contributes to the capacity to think outside the box and put existing ideas together in a new combination with the resources of self-knowledge, expertise, and access to relevant information. It involves the motivation of intelligence in general that people face in their lives such as the association of ideas, recalling, having perception, analogical thinking, and engaging in self-criticism.

The club believes that excellence can be achieved by uniting ourselves to form a body that we can help and promote the importance of vocabulary and penning it. The club shall promote and aid active interest in the direction of shaping thoughts through writing. Through the club, students will achieve a platform to exhibit themselves through their composition. Following are the broad objectives of the club.

I. To provide a platform to showcase their writing skills
II. To encourage people to make writing a regular and productive habit
III. To help students frame their ideas with perfection
IV. Provide beta readers for students who write
V. To create a space for group discussions and refining the knowledge about blogs, essays, and novels

Major Activities

i. Poster Designing
ii. Digital Poster Making
iii. Stage plays
iv. Mono Act Competition
v. Dance Competition
vi. Rangoli Competition
vii. Essay writing
viii. Weekly blogs on social media
ix. Extempore competition
x. Writer's day celebration
xi. Group discussions on each other's write-ups

Overall, the club provides opportunities to think without boundaries, initiate curiosity, develop imagination and imaginative plays, respond to experiences and express ideas, develop traditional creative arts, decision-making skills.

Proposed New facilities at DDU to boost the Extra-Curricular and Extension activities

Sr No.	Facility	Approx. Cost(INR)	Purpose
1	Indoor stadium and Gym with 15000 ft^2	3,00,00,000	Badminton, Volley ball, TT
2	Outdoor Stadium with 100 mt running track	1,00,00,000	For Cricket, Football, Basket ball , Athletic sports
3	Open Air theater	1,00,00,000	
Total Cost in INR		5,00,00,000	

Summary: DDU required help of Rs. 5,00,00,000 from government to create various sports facilities including open air theatre.

Summary

This IDP also provides information how DDU is planning to improve manage its human resources, information management. DDU endeavours to develop good citizens in addition to providing well trained professionals.

It is necessary to have quality manpower, infrastructure and necessary funding for the development. Development of academic infrastructure 46 crores, multidisciplinary research 16 core, and extracurricular activities 5 crore in total university needs 67 crore in coming 5 years This IDP proposes how Dharmsinh Desai University is planning to capacity development and monitoring to ensure the plans are implemented and targets are achieved within stipulated time period.

Planning in advance and implementation of the plan along with its monitoring are essential components for the success. Hence DDU also puts in place necessary monitoring mechanism consisting of competent authorities to monitor the proposed plan.

Annexure I List of Equipment/Instruments available
Faculty of Technology:

Sr. No.	Name of Lab Equipment	Quantity	Price
1	Desktop Computers	824	31899820
2	Laptop	6	413200
3	Networking Switches	14	109100
4	Antenna Trainer Kit	2	323800
5	Communication Kit	34	1157779
6	Cathod Ray Oscilloscope	62	1548120
7	LAN Trainer Kit	3	272461
8	Lab Station	1	381451
9	Frequency Counter	6	195018
10	Digital Storage Oscilloscope	53	1676570
11	DSP Kit	8	338511
12	Electrical Machine Set-Up	8	435657
13	Function Generator	77	1525062
14	Fiber Optic Kit	11	859764
15	Microcontroller Kit	24	603122
16	Meter	32	394525
17	MW Test Bench	11	497205
18	Power Supply	31	222154
19	Servo Voltage Stabilizer	10	238950
20	VLSI Kit	27	902337
21	Satellite Trainer Kit	8	1098563
22	TV Trainer	9	324948
23	Fixed Bed Catalyst Testing Reactor System	1	475000
24	Incubator Shaker	1	333528
25	Reid wooed viscometer	1	8000
26	Basket Centrifuge	1	19244
27	Say boltz viscometer	1	3300
28	Elutriator	1	53460
29	High Pressure Liquid Chromatoghaph	1	2080865
30	FTIR Spectrometer	1	1233465
31	BET Surface area Analyzer	1	2009000
32	Atomic Absorption Spectro-photometer	1	1138934
33	RTD Studies in plug flow reactor	1	51120
34	Absorption in packed bed with CO2 cylinder	1	98880
35	Packed bed distillation column	1	145330
36	Mass transfer with and without chemical reaction	1	105020

37	Solid in air diffusion	1	28950
38	Spray Tower	1	49215
39	Plug flow reactor(coil type)	1	38340
40	Vapor in air diffusion apparatus	1	35100
41	Adiabatic Reactor	1	36180
42	Vibrating Screen	1	38340
43	Liquid-liquid extraction in a packed tower	1	53460
44	RTD studies in packed bed reactor	1	40095
45	Froth flotation cell with air pump	1	35640
46	Low flow rate high precision pump	1	50920
47	Digital pH sensor with transmitter	1	96920
48	Emulsifier & Homogenizer	1	95000
49	Photo catalytic reactor	1	432000
50	Pneumatic control valve (0-5lit/min)	1	144000
51	Pneumatic control valve (0-15lit/min)	1	136000
52	Cascade CSTR	1	66934
53	Brook field viscometer	1	414675
54	Total Organic Carbon Analyzer	1	935125
55	Spectrophotometer, UV-2100, with Deskjet Printer	1	110000
56	Plate bearing test apparatus	1	55650
57	Field SPT Test and Sampling	1	1,20,000
58	Universal Triaxial test apparatus	1	75400
59	Static cone penetration	1	255000
60	Direct Shear test Apparatus	1	80750
61	Unconfined compression test	1	63650
62	Bench Type Consolidometer ,	1	115900
63	Atomic Absorption Spectrophotometer	1	1215553
64	U.V. Spectrophotometer DR 6000	1	1045148
65	Spectrometer DR 2000 (Model No.45250-05, 16900-01)	1	276197
66	Yash Stack Monitoring Kit	1	103000
67	Toxi Rae plus PID Detector	1	115000
68	Respirable Dust Sampler APM 460BL	1	277594
69	Weather Monitoring Station	1	207900
70	Digital Stack Monitoring Kit (GL: 6000 Greenline FGA)	1	633179
71	Microprocessor based Gas Chromatograph Model Micro-9100	1	1518394
72	Eurotorn make Digital stack gas Analyser (ECOLINE-6000)	1	637000
73	Digital compression Testing Machine 2000 KN Capacity	1	1,82,900.00
74	Digital Temperature Controller of Cooling & Heating	1	1,30,828.00

	System		
75	Viscometer Bath with Cannon Manning Viscometer Tube	1	160977
76	Marshall Stability Testing Machine with Automatic Compactor	1	212060
77	Desktop Computer	2	86350
78	LENEVO All in one. Computers -I-5	10	487500
79	STAAD - PRO V8.1- 5 users	1	451679
80	STAAD Pro. select Subscription For 3year	1	112360
81	Bentley GINT progressional Plus.	1	262500
82	Z soil Softwere 2D-3D Single User 64 bit - version 13.14.	1	325500
83	HP All in one HP-20-R203 Core I-3 6th Generation	18	694600
84	Dell - All in one	5	277143
85	Dell - All in one	2	419000
86	ETABS Ultimate software (Indian code) Standalone single user	1	163013
87	Automation Trainer	1	117275
88	Level Trainer	1	156634
89	SCADA Trainer	1	300000
90	Distributed Control System trainer with plant	1	2100000
91	LAB Stations	5	1000000
92	Digital Oscilloscope	5	130000
93	Flow Trainer	1	145000
94	Data Acquisition trainer	1	175000
95	Temperature Trainer	1	85000
96	Epicyclic Gear Train Apparatus	1	95000
97	Experimental Determination of Coriollis Component Apparatus	1	90000
98	Slip and Creep Test Rig	1	90000
99	Universal Vibration Apparatus	1	160000
100	Bearing Endurance Tester	1	1857311
101	Journal bearing test rig	1	691688
102	Exhaust Gas Analyzer	1	3,62,251.00
103	4-stroke 4-Cylender S.I. Engine Test Rig. with Morse Test	1	3,37,512.00
104	Computer based single cylender C.I. Engine Test Rig.	1	5,96,249.00
105	Computer based single cylender 2-stroke S.I. Engine Test Rig.	1	5,65,885.00
106	CRDI 4-stroke 4-cylinder C.I. Engine - Actual cut section	1	2,24,999.00
107	Steam jet refrigeration trainer	1	185250
108	Mini air-conditioner tutor	1	102350
109	Cascade refrigeration tutor	1	210000

110	Cold storage trainer	1	210000
111	"PINNACLE " Precision Hydraulic Surface Grinder	1	672100
112	Pinacho Conventional Lathe " R200 X 750 , Spindle Bore	15	5355270
113	Universal Milling Machine , Model -Uf2 With Accessories	1	1287653
114	Parishudh Universal Cylindrical Grinding Machine	1	922738
115	Pmt Bar Chuck Capstan & Second Operation Lathe	1	217631
116	Radial Drilling Machine ,Model -Bvr-3 With Standard	1	477742
117	Power Max 30 Hp Cutting Machine ,Csa Hand System	1	126000
118	Spares ,Consumabbles & Accessories	31	141852
119	Esab -1000 Thyristorised Submerged Arc Welding Outfit	1	332367
120	Esab -300 Amps Inverter Based Ac/Dc Tig/Mma Welding	1	306307
121	Power Press - Rajesh Make ,Model - Rcp 10t	1	130305
122	ACER VERITON Computer System with CPU—INTEL CORE i3	32	716190.4
123	ACER TFT Monitor 20"	32	182857.28
124	Actual cut section of Demonstration of chassis Truck with Engine	1	3,85,000.00
125	Servo Computerized Universal Testing Machine	1	1248615
126	Vicker Cum Brinnel Hardness Tester	1	150060
127	Digital Fatigue Testing Machine	1	106600
128	Digital Pendulum Izod Testing Machine	1	111930
129	Inverted metallurgical Microscope with microstructure	1	303600
130	Ultrasonic Flaw Detector and its Accessories	1	281143
131	Strain gauge rosette apparatus	1	195000
132	Hydraulic dead weight tester	1	435000
133	Dell - Dual Intel® Xeon® E5630 2.53GHz 12M cache	1	209010
134	78” finger touch high resolution board with installation	1	119700
135	42” plotter HP 510 with stand and roll feed & network card	1	200287
136	Experimental Steam Power Plant (400 Kg/hr)	1	1558125
137	Pelton wheel turbine test rig	1	159700
138	Francis turbine test rig	1	163600
139	Kalplan Turbine test rig	1	209500
140	Two stage reciprocating air compressor	1	138500
141	Vertical Machining Center (Be At 40)	1	3970700
142	Mtx Micro Trainer Kit	2	1101530
Total Amount			**98675899**

Faculty of Pharmacy :

Sr. No	Name of the Department	Name of the Equipment	Available
1	Dept of Pharmaceutics	Ampoule sealing machine	1
2	Dept of Pharmaceutics	Magnetic stirrer 500ml & 1 Litr capacity	7
3	Dept of Pharmaceutics	Aseptic cabinet	1
4	Dept of Pharmaceutics	Tablet coating machine	1
5	Dept of Pharmaceutics	Ball mill	1
6	Dept of Pharmaceutics	Double cone blender	1
7	Dept of Pharmaceutics	Autoclave	2
8	Dept of Pharmaceutics	Steam distillation still	1
9	Dept of Pharmaceutics	Vacuum pump	3
10	Dept of Pharmaceutics	Standard sieves no. 8, 10, 12, 22, 44, 66, 80	1
11	Dept of Pharmaceutics	Tablet punching machine	1
12	Dept of Pharmaceutics	Capsule filling machine	3
13	Dept of Pharmaceutics	Ampoules washing machine	1
14	Dept of Pharmaceutics	Tablet Disintegration apparatus	2
15	Dept of Pharmaceutics	Hardness tester	5
16	Dept of Pharmaceutics	Friability test apparatus	2
17	Dept of Pharmaceutics	Clarity test apparatus	1
18	Dept of Pharmaceutics	BOD Incubator	2
19	Dept of Pharmaceutics	Digital pH meter	5
20	Dept of Pharmaceutics	Bulk density	1
21	Dept of Pharmaceutics	Hot plate	5
22	Dept of Pharmaceutics	Humidity Chambers	1
23	Dept of Pharmaceutics	Tray dryer	1
24	Dept of Pharmaceutics	Moisture balance	1
25	Dept of Pharmaceutics	Water bath	5
26	Dept of Pharmaceutics	Ointment filling machine	1
27	Dept of Pharmaceutics	Capsule counter	2
28	Dept of Pharmaceutics	Homoginizer	5
29	Dept of Pharmaceutics	Digital balance	5
30	Dept of Pharmaceutics	Microscope	30
31	Dept of Pharmaceutics	Stage and eye piece micrometers	30
32	Dept of Pharmaceutics	Brookfileld viscometer	1
33	Dept of Pharmaceutics	Sieve Shaker Machine	1
34	Dept of Pharmaceutics	Extractive Distillator	1
35	Dept of Pharmaceutics	Mechanical Stirrer	5
36	Dept of Pharmaceutics	Suppository mold	25
37	Dept of Pharmaceutics	Ultra Sonicator	4
38	Dept of Pharmaceutics	Sterility tester	1
39	Dept of Pharmaceutics	Franz Diffusion cell	5
40	Dept of Pharmaceutics	Hot Air Oven	5
41	Dept of Pharmaceutics	Tablet Dissolution test apparatus	2

42	Dept of Pharmaceutics	Mortar and Pestle	45
43	Dept of Pharmaceutics	Milli Pore Filter	1
44	Dept of Pharmaceutics	Vacuum Distillator	2
45	Dept of Pharmaceutics	Desiccators	5
46	Dept of Pharmaceutics	Refrigerator	2
47	Dept of Pharmaceutics	Tincture press	2
48	Dept of Pharmaceutics	Centrifuge	2
49	Dept of Pharmaceutics	Colony Counter	1
50	Dept of Pharmaceutics	Antibiotic Zone Rader	1
51	Dept of Pharmaceutics	Laminar Air Flow	3
52	Dept of Pharmaceutics	Micropipette single & Multi Channeled	4
53	Dept of Pharmaceutics	UV Cabinet	2
54	Dept of Pharma. Chemistry	Refractometer	1
55	Dept of Pharma. Chemistry	Polarimeter	2
56	Dept of Pharma. Chemistry	Photoelectric colorimeter	1
57	Dept of Pharma. Chemistry	Atomic model set	2
58	Dept of Pharma. Chemistry	Electronic balance	2
59	Dept of Pharma. Chemistry	Periodic table chart	1
60	Dept of Pharma. Chemistry	Hot plates	8
61	Dept of Pharma. Chemistry	Oven	5
62	Dept of Pharma. Chemistry	Refrigerator	2
63	Dept of Pharma. Chemistry	Analytical Balances for demonstration	5
64	Dept of Pharma. Chemistry	Digital balance 10mg sensitivity	5
65	Dept of Pharma. Chemistry	Suction pumps	5
66	Dept of Pharma. Chemistry	Muffle Furnace	2
67	Dept of Pharma. Chemistry	Mechanical Stirrers	5
68	Dept of Pharma. Chemistry	Magnetic Stirrers with Thermostat	10
69	Dept of Pharma. Chemistry	Vacuum Pump	2
70	Dept of Pharma.	Digital pH meter	5

	Chemistry		
71	Dept of Pharma. Chemistry	Microwave Oven	2
72	Dept of Pharma. Chemistry	Distillation Unit	2
73	Dept of Pharma. Chemistry	Arsenic Limit Test Apparatus	20
74	Dept of Pharma. Chemistry	Reflux flask and condenser double / triple necked	20
75	Dept of Pharma. Chemistry	Nessler's Cylinders	50
76	Dept of Pharma. Chemistry	Reflux flask and condenser single Necked	25
77	Dept of Pharma. Chemistry	Electronic water bath(12 holes)	5
78	Dept of Pharma. Chemistry	Copper water bath	25
79	Dept of Pharma. Chemistry	Colorimeter	3
80	Dept of Pharma. Chemistry	UV- Visible Spectrophotometer	1
81	Dept of Pharma. Chemistry	Flourimeter	1
82	Dept of Pharma. Chemistry	Digital Balance (1mg sensitivity)	2
83	Dept of Pharma. Chemistry	Nephelo Turbidity meter	1
84	Dept of Pharma. Chemistry	Flame Photometer	1
85	Dept of Pharma. Chemistry	Potentiometer	1
86	Dept of Pharma. Chemistry	Conductivity meter	1
87	Dept of Pharma. Chemistry	HPLC	1
88	Dept of Pharma. Chemistry	Deep Freezer (Desirable)	1
89	Dept of Pharma. Chemistry	Ion- Exchanger	1
90	Dept of Pharmacology	Microscopes	20
91	Dept of Pharmacology	Haemocytometer with Micropipettes	20
92	Dept of Pharmacology	Sahli's haemocytometer	37
93	Dept of Pharmacology	Hutchinson's spirometer	1
94	Dept of Pharmacology	Spygmomanometer	10
95	Dept of Pharmacology	Stethoscope	10

96	Dept of Pharmacology	Different Contraceptive Devices and Models	1
97	Dept of Pharmacology	Pregnancy diagnosis kit	1
98	Dept of Pharmacology	Mercury thermometer	10
99	Dept of Pharmacology	Cell analyzer	1
100	Dept of Pharmacology	Permanent Slides for various tissues	1
101	Dept of Pharmacology	Models for various organs	1
102	Dept of Pharmacology	Specimen for various organs and systems	1
103	Dept of Pharmacology	Skeleton and bones	2
104	Dept of Pharmacology	Muscle electrodes	1
105	Dept of Pharmacology	Lucas moist chamber	1
106	Dept of Pharmacology	Myographic lever	1
107	Dept of Pharmacology	Stimulator	1
108	Dept of Pharmacology	Centrifuge	1
109	Dept of Pharmacology	Sherrington's kymograph machine / polyrite	15
110	Dept of Pharmacology	Sherrington drum	15
111	Dept of Pharmacology	Perspex bath assembly (single unit)	15
112	Dept of Pharmacology	Aerators	15
113	Dept of Pharmacology	Software packages for experiment	1
114	Dept of Pharmacology	Standard graph of various drug	1
115	Dept of Pharmacology	Actophotometer	1
116	Dept of Pharmacology	Rotarod	1
117	Dept of Pharmacology	Pole climbing apparatus	1
118	Dept of Pharmacology	Analgesiometer (eddy's hot plate and radiant heat methods)	1
119	Dept of Pharmacology	Convulsiometer	1
120	Dept of Pharmacology	Plethysmograph	1
121	Dept of Pharmacology	Digital pH meter	1
122	Dept of Pharmacology	Histamine chamber	1
123	Dept of Pharmacology	Metabolic cage	1
124	Dept of Pharmacology	Dissection tray & boards	10
125	Dept of Pharmacology	Stereotaxic apparatus	1
126	Dept of Pharmacology	Digital glucometer	1
127	Dept of Pharmacology	Folin- wu tubes	60
128	Dept of Pharmacology	Hemostatic artery forceps	10
129	Dept of Pharmacology	Levers , cannula	20
130	Dept of Pharmacology	Hypodermic syringes & needles Size 15,24,26G	20
131	Dept of Pharmacognosy	Compound Microscope	30
132	Dept of Pharmacognosy	Dissecting Microscope	30
133	Dept of Pharmacognosy	Projection Microscope	3
134	Dept of Pharmacognosy	Binocular Microscope	2
135	Dept of	Polarized Microscope	1

	Pharmacognosy		
136	Dept of Pharmacognosy	Electronic Digital balance	2
137	Dept of Pharmacognosy	Autoclave	2
138	Dept of Pharmacognosy	Hot air oven	2
139	Dept of Pharmacognosy	Refrigerator	1
140	Dept of Pharmacognosy	Zone reader	1
141	Dept of Pharmacognosy	Digital pH Meter	1
142	Dept of Pharmacognosy	Colorimeter	1
143	Dept of Pharmacognosy	Sterility testing unit	1
144	Dept of Pharmacognosy	Camera lucida	24
145	Dept of Pharmacognosy	Eye piece micrometer	20
146	Dept of Pharmacognosy	Stage micrometer	20
147	Dept of Pharmacognosy	Muffle furnace	2
148	Dept of Pharmacognosy	Moisture balance	1
149	Dept of Pharmacognosy	Heating Mantles-Small	12
150	Dept of Pharmacognosy	Vacuum pump	2
151	Dept of Pharmacognosy	Micropipette single & Multi Channeled	2
152	Dept of Pharmacognosy	Micro Centrifuge	2
153	Dept of Pharmacognosy	Electric water bath	4
154	Dept of Pharmacognosy	Hot plate	4
155	Dept of Pharmacognosy	Microtome rotary	1
156	Dept of Pharmacognosy	Mixer grinder	2
157	Dept of Pharmacognosy	UV Cabinet	2
158	Dept of	Water Distillation unit	1

	Pharmacognosy		
159	Dept of Pharmacognosy	Cutter Mill (Bark and seed grinder)	1
160	Dept of Pharmacognosy	Medicinal Plant Chart	39
161	Dept of Pharmacognosy	Models	1
162	Dept of Pharmacognosy	Permanent Slide	1
163	Dept of Pharmacognosy	Sonicator	1
164	Dept of Pharmacognosy	Electrophoresis	1
165	Dept of Pharmacognosy	Fermentor	1
166	Dept of Pharmacognosy	Rotary Shaker	1

Faculty of Dental Sciences :

Department	Dental Chairs	Computers	Seminar halls with ICT facilities	Laboratories
Prosthodontics	45	2	1	3
Orthodontics	29	2	1	1
Oral medicine and radiology	12	4	-	
Oral Surgery	41	2	1	
Oral Pathology	5	2	1	2
Conservative and endodontics	45	3	1	3
Pedodontics	20	1	-	1
Periodontics	45	2	1	
Public health dentistry	19	1	-	
Lecture halls - 4 and Auditorium – 1	-	4	-	
Administration	5	8+11	1	
Library	-	24+6	-	
Total	**266**	**72**	**7**	**10**

Annexure II Major and Minor Research Projects
Faculty of Pharmacy

(ii) Research Projects:

Minor Research Projects (External): **Completed List as follow**

MINOR RESEARCH PROJECTS						
Sr. No.	**Title**	**Principle Investigator & Team**	**Funding Agency**	**Year of Sanctioned**	**Duration of Project**	**Amount in lacs**
01	Design, synthesis and biological evaluation of benzamide analogues for histone deacetylase inhibition in cancer therapy	Dr. Vipul P. Patel, Dr. B. N. Suhagia	GUJCOST	2016	2 Year	4.10
02	In-vitro, In-vivo screening of screening of *Commiphora Weightii* (Arnatt) extracts prepared by Sodhana process for hyperlipidemia.	Mrs. Mayuree A, Dr. Sanjay Chauhan, Dr. B. N. Suhagia	GUJCOST	2016	2 Year	2.70
03	Design of multi-target inhibitors for the management of type-2 diabetes and associated cardiovascular risk	Mr. Jagat R. Upadhyay, Dr. B. N. Suhagia	GUJCOST	2016	2 Year	2.30
04	Synthesis and characterisation of gallic acid derivatives and evaluation of its antiaging properties.	Dr. Atindra Shukla Dr.Tejal Soni	GUJCOST	2016	2 Year	4.70
05	Inkjet as a drug delivery system	Dr. Atindra Shukla, Dr. Tejal Soni, B. N. Suhagia	Leo Lens Technologies Inc.	2012	1 Year	4.00
06	Evaluation of cardioprotective activity of Corchorus aestuans L. against isoproterenol induced myocardial infarction in rats.	Mrs. Carol P. Macwan, Dr. Tejas B Patel, Dr. B. N. Suhagia	GUJCOST	2015	2 Years	4.70
07	Development and optimization of Herbal Formulation for the treatment of Diabetes Mellitus	Mr. Tushar R Patel, Dr. Tejas B Patel Dr. B. N. Suhagia	GUJCOST	2015	2 Year	7.70

08	A study on particle engineering on poorly compressible pharmaceutical material by dry particle coating using lab scale mist generator	Manish Thakkar, Tejal Soni, Juhi rana	IEDC	2014	1 Year	0.80
09	Development of novel womsn's friendly antifungal microemulsion loaded gel of tree tea oilcurcuminalkylpolyglucoside	Atindra sukla, Tejal Soni Khushbu Bhatt	IEDC	2014	1 Year	0.80
10	Formulation and evaluation of microemulsion based delivery system for *Boswellia serrata*	Tejal Soni Mukesh Gohel Asha Patel	GUJCOST	2014	2 years	4.5

Current status of SSIP Projects: (2019-20, 20-12 completed) 2022-23 ongoing

Sr, No	Year	Name of Student	Name of mentor	Granting Agency	Project Title	Amount in Rs.
1	2019-20	Jay Bhavsar	Tejas Patel	SSIP, Gujarat	Development and evaluation of herbal formulation containing extract of bacopa monniera	33000
2	2019-20	Devansh Thakar	Arun Soni	SSIP, Gujarat	Evaluation of hypo-endrogenic effect Mesua ferrea linn in experimentally induced PCOS in female rats	150873
3	2019-20	Srushti Shah	Arun Soni	SSIP, Gujarat	Evaluation of spasmolytic effect of Psidium guajava chicken ileum preparation	160355
4	2019-20	Kripa Trabadia	Dinal Patel	SSIP, Gujarat	Development and characterisation of herbal ciggarette for the treatment of ashthma	162000

5	2019-20	Dev dipakkumar Soni	Mansi Dholkia	SSIP, Gujarat	Development of in-situ Sustained release herbal medicine for Otitis media	32000
6	2019-20	Aneri Panchal	Arun Soni	SSIP, Gujarat	Effects of various edible oils in high fat diet induced hyperlipidemia in rats	48000
7	2021-22	Priyam HiteshkumarThakar	Tejal Soni	SSIP, Gujarat	Development of novel surface modified plan derived Exosome-like Nanoparticle encapsilated with anti-cancer drug for the treatment of Adeno Cell Cancer	35000
8	2021-22	Prachi Nariyani	Punitkumar Bhatt	SSIP, Gujarat	In vitro evaluation of acaricidal effect of various natural ingredients and formulation of thereof	28000
9	2021-22	Komal B, Parmar	Mehul Patel	SSIP, Gujarat	Development of topical herbal gel of cabbage leaves and turmeric for treatment of Breast Engorgement	25000
10	2021-22	Devansh Thakar	Tejal Soni	SSIP, Gujarat	Design, Development and Optimization of Mesua Ferrea Linn loaded albumin nanoparticles and its effect on lipid peroxidation in cervical cancer	32000
11	2021-22	Dhwani Shah	Tejal Soni	SSIP, Gujarat	Development of engineered colon specific nanocomposite film for microbially control delivery system	25000
12	2022-23	Meshva Rajendrakumar Patel	Dr Tejal G Soni	SSIP, Gujarat	Formulation, development and evaluation of metallic complex of curcumin for the treatment of skin	40,000/-

					diseases and disorders	
13	2022-23	Gautmi Ubharani	Dr. Punitkumar R. Bhatt	SSIP, Gujarat	Development and evaluation of novel wound healing herbal formulation for veterinary use	35,000/-
14	2022-23	Dharmik A. Shah	Dr. Punitkumar R. Bhatt	SSIP, Gujarat	Development and evaluation of novel acaricidal herbal formulations	35,000/-
15	2022-23	Vatsal Ashokbhai Navapariya	Dr. Mansi S Dhokia	SSIP, Gujarat	Design optimization and characterization of antibiotics loaded nanostructured lipid carriers for ophthalmic drug delivery.	30,000/-
16	2022-23	Satyam Rajnikant Kotak	Dr. Jagatkumar R Upadhyay	SSIP, Gujarat	Design, synthesis and antimicrobial activity of novel heterocyclic compounds	25,000/-
17	2022-23	Mahima Hirenkumar Sukhadia	Mr.Vashisth P Bhavsar	SSIP, Gujarat	A novel gastroretentive formulation of persea americana and curcumin have antiulcer efficacy for various types of ulcers.	22,000/-
18	2022-23	Rudra Priyesh Shah	Dr.Vipul T Prajapati	SSIP, Gujarat	Antiulcer action of anthocephalous cadamba leaves against stress and alcohol-induced gastrointestinal trauma in rats.	22,000/-
19	2022-23	Aneri Panchal	Dr. Tejas B. Patel	SSIP, Gujarat	Design and development of herbal film forming spray for wound healing	20,000/-
20	2022-23	Nandini P. Upadhyay	Dr. Carol P. Macwan	SSIP, Gujarat	Phytopharmacognostical study, formulation and evaluation of lozenges from abrus precatorius	15,000/-

MRP commenced by university:

Sr. No.	Academ ic Year	Department	Name of the teacher getting seed money	Amount of seed money	Year of Receiving Grant
1	2022-23	Department of Pharmaceutical Chemistry	Dr. Jagat Upadhyay	92000	06-12-2022
2	2022-23	M.Pharm in Pharmaceutics	Dr. Kishor Sorathia	90000	06-12-2022
3	2022-23	Department of Pharmacognosy	Dr. Punit Bhatt	88000	06-12-2022
4	2022-23	M.Pharm in Pharmaceutics	Dr. Mansi Dholakia	94000	06-12-2022
5	2022-23	Department of Pharmaceutics and Pharmaceutical Technology	Ms. Dinal Patel	92000	06-12-2022
6	2022-23	Faculty of Pharmacy	Mr. Vashisth Bhavsar	94000	06-12-2022
7	2022-23	Department of Pharmacology	Dr. Gopi Shah	86000	06-12-2022
8	2022-23	Department of Pharmaceutical Chemistry	Mr. Shantilal Padhiyar	86000	06-12-2022
9	2022-23	Department of Pharmaceutical Chemistry	Ms. Jenee Christian	80000	06-12-2022

Faculty of Dental Science

Details for Minor research projects undergoing at FOD with seed money sanctioned by university.

Sr. No.	Academic Year	Department	Name of the teacher getting seed money	Amount of seed money sanctioned	Year of Receiving Grant
1	2022-23	Periodontology	Dr Meghna Jani	36800	2022
2	2022-23	Oral and Maxillofacial Surgery	Dr Hirak Patel	100000	2022
3	2022-23	Oral and Maxillofacial Surgery	Dr Palak Mehta	100000	2022
4	2022-23	Conservative Dentistry and Endodontics	Dr Ronak Patel	90000	2022

5	2022-23	Conservative Dentistry and Endodontics	Dr Yash Shah	40000	2022
6	2022-23	Conservative Dentistry and Endodontics	Dr Naman Vaidya	90000	2022

Faculty of Technology

Major Research Projects (Completed/Ongoing)

Title	Sanctioned Amount	Name of Funding Agency
Design & development of hardware module for the phase & power measurement for 64 channels of LHCD	₹ 24,06,900	Dept. of Atomic Energy, Govt. of India
FinFET based SRAM Cell Design	₹ 7,30,000	Gujarat Council on Science and Technolo gy(GUJCOST), Govt. of Gujarat
Modeling and Prediction for Control of Plasma Disruptions in Tokamak using Machine Learning	₹ 29,30,100	Dept. of Atomic Energy, Govt. of India

Minor Research Projects (Completed/Ongoing)

Title	Sanctioned Amount	Name of Funding Agency
Development of a low cost speech therapy device for taining of disabled	Rs. 8000	Shri S. G. Brahmbhatt Badhir Vidyavihar, Nadiad
Design & Development of a Metamaterial Absorber for the Frequency Band of 300MHz-4GHz (UHF band)	Rs.70,000	Gujarat Council on Science and Technology(GUJCOST), Govt. of Gujarat
OCR Mobile Application for Indoor Movement of Blind People	Rs.1,00,000	DST, Govt. of India, under IEDC
Electronic Personal Assistance System	Rs.1,00,000	DST, Govt. of India, under IEDC
Microcontroller Based Inverter	Rs.1,00,000	DST, Govt. of India, under IEDC
Nanotechnology to provide clean drinking water in developing nations: Poor Man’s Filter.	Rs. 10.27 lakhs for three years	GSFC Science Foundation R&D Award
Process development for yellow 11 dye	Rs. 2 lakhs	Alps Chemicals
Applications of iron oxide catalyst for green technologies	Rs. 5 lakhs	Newraka Chemicals
Separation of toluene suphonic acids	Rs. 1.55 lakhs	Reena Chemicals
Preparation of nanoclays	Rs. 2.88 lakhs	Jani Clays
Preparation of teflon nano-dispersions	Rs. 1.98 lakhs	Universal Medicaps

Environmental treatablity set-up, MIMO system, software and computers, lab renovation, balances	Rs. 48 lakhs	DST-FIST Grant
Feasibility of Hydrogenation of heavy white oil	25,000/-	APAR Ind.
Photocatalytic Advanced Oxidation Process for Waste Water Treaatment	10,00,000/-	GPCB
Under planning	Rs. 3 Lakhs	Gujcost/DST/University
Under planning	Rs. 5 Lakhs	Gujcost/DST/University
Fire Fighting Unmanned Aerial Vehicle (UAV)	23661	SSIP
Solar Operated Automated Military Application Rover	50,000/-	GUJCOST (DST)
Flying Farm	20,000/-	SSIP

MRP by University

Title	Seed Money	Total Amount
SSIP	13052	13052
Conference Paper	10000	10000
SSIP 1.0	106390	99390
Conference Paper	10000	10000
SSIP 2.0	83200	83200
Thermal Gradient measurement of fibre reinforced concrete pavement		97200
Under planning	Rs. 1 Lakh/project	Rs. 2 Lakhs
Under planning	Rs. 1 Lakh/project	Rs. 2 Lakhs
Customized Tribometer	150000	122500
Design and development of fixture for static load testing on taper roller bearing	100000	65000

Research Projects by Anchor Institute& Nano Technology Centre (Completed/Ongoing)

Sr. No.	Activities*	Head	Duration	Revenue	Remarks
1	Anchor Institute	Extension Program	4 years	Rs. 10 crores from Govt. of Gujarat	Imparting manpower training programs to enhance technical skill level in chemical & petrochemical sector in state of Gujarat

2	Center for Surface Science and Nanotechnology	Centre of Excellence	Starting March 2009	Rs. 3.5 crore from Govt. of Gujarat	R&D and consulting in surface science and nanotechnology
3	Community Polytechnic Programs	Extension Program	Starting September 2010	Rs. 71 lakhs, Rs. 20 lakhs capital and three years Rs. 17 lakhs each recurring expenses	Imparting technical courses in agriculture, fertilizers, insecticides, environmental pollution control, etc.
4	M.Tech program in Chemical Engineering – specialization in surface science and nanotechnology	New M.Tech program under Innovative Schemes of UGC	Starting July 2010	Rs. 45.5 lakhs for five years	Imparting M.Tech education in chemical engineering with specialization in surface science and nanotechnology
5	Center for Excellence in Nanocatalysis – Development and Applications	Centre for Excellence R&D program	Starting March 2009	Rs. 28.5 lakhs for three years	Establish centre of excellence in nanotechnology under GUJCOST
6	Young Scientist Award to Dr. Manish Mishra	R&D project	Starting May 2010	Rs. 20 lakhs for three years	Solid acid and base catalyzed reactions R&D project under Department of Science & Technology, New Delhi
7	GSFC Science Foundation R&D Award	R&D Project	Starting January 2010	Rs. 10.27 lakhs for three years	Nanotechnology to provide clean drinking water in developing nations: Poor Man's Filter.
8	Alps Chemicals	R&D project	Starting November 2009	Rs. 2 lakhs	Process development for yellow 11 dye

9	Newraka Chemicals	R&D Project	Starting September 2009	Rs. 5 lakhs	Applications of iron oxide catalyst for green technologies
10	Reena Chemicals	R&D Project	Starting March 2010	Rs. 1.55 lakhs	Separation of toluene suphonic acids
11	Jani Clays	R&D Project	Starting January 2010	Rs. 2.88 lakhs	Preparation of nanoclays
12	Universal Medicaps	R&D Project	Starting June 2010	Rs. 1.98 lakhs	Preparation of teflon nano-dispersions
13	International Workshop on Surface Science and Nanotechnology	Workshop	February 2, 3, 2010	Grant of Rs. 2.02 lakhs from Govt. of Gujarat; Income of Rs. 1.95 lakhs	Prof. Krister Holmberg from Sweden as main speaker
14	DST-FIST Grant	R&D Projects	Starting July 2011	Rs. 48 lakhs	Environmental treatablity set-up, MIMO system, software and computers, lab renovation, balances
15	Industry Founding Members of Center for Surface Science & nanotechnology	Consulting	Starting July 2010	Rs 1.5 crore	Founding members fee
16	International Workshop on Surface Science & Nanotechnology	Workshop	December 19-20, 2011	Grant of Rs. 2.9 lakhs from Govt. of Gujarat.	Prof. Robert Prudhomme from USA as main speaker.
17	Hi-Shine Inks	R&D projects	2011-2014	Rs. 5 lakhs	Ink product development
18	DST-IEDC grant	R&D project	2011-14	Rs 3 lakhs	Agricultural productivity; green surfactants

19	Ambernath Organics	R&D Project	2013-14	Rs. 1.02 lakhs	Environmental Degradation of Organic Wastes
20	Leo Lens	R&D Project	2012-2015	Rs. 8 lakhs	Contact lens development and drug-delivery
21	Asian Paints	R&D Projects	2013-15	Rs. 8 lakhs	New paint products and technologies
22	GUJCOST	R&D Project	2014-16	Rs. 3.6 lakhs	Chalk wettability studies
23	APAR Ind.	Feasibility Study	2017-2018	15,000/-	Feasibility of Hydrogenation of heavy white oil
24	APAR Ind.	Feasibility Study	2018-2019	25,000/-	Feasibility of Hydrogenation of heavy white oil
25	GPCB	R&D	2018-2019	10,00,000/-	Photocatalytic Advanced Oxidation Process for Waste Water Treaatment

* Workshop/ R & D/ Testing Work/ Consultancy/Continuing Education Programme (short term course)/Certification