ANNEXURE

A.CONTRIBUTION TO TEACHING

A.1 COURSES TAUGHT TILL DATE

YEAR	SEMESTER 1	SEMESTER 2
2023	CHE F311 Kinetics & Reactor Design (FD)	CHE F343 Process Design Principles – 2 (FD)
	CHE G622 Advanced Chemical Engineering Thermodynamics (HD)	CHE G641 Reaction Engineering (HD)
2022	CHE F311 Kinetics & Reactor Design (FD)	CHE F343 Process Design Principles – 2 (FD)
2021	CHE F311 Kinetics & Reactor Design (FD)	CHE G641 Reaction Engineering (HD)
	CHE F213 Chemical Engineering Thermodynamics (FD)	CHE F343 Process Design Principles – 2 (FD)
2020	CHE F311 Kinetics & Reactor Design (FD)	CHE G641 Reaction Engineering (HD)
	CHE F213 Chemical Engineering Thermodynamics (FD)	CHE F343 Process Design Principles – 2 (FD)
2019	CHE F311 Kinetics & Reactor Design (FD)	CHE G641 Reaction Engineering (HD)
	CHE F213 Chemical Engineering Thermodynamics (FD)	CHE F343 Process Design Principles – 2 (FD)
2018	CHE F311 Kinetics & Reactor Design (FD)	CHE G641 Reaction Engineering (HD)
	CHE F213 Chemical Engineering Thermodynamics (FD)	CHE F343 Process Design Principles – 2 (FD)
2017	CHE F311 Kinetics & Reactor Design (FD)	CHE G641 Reaction Engineering (HD)
	CHE F213 Chemical Engineering Thermodynamics (FD)	CHE F343 Process Design Principles – 2 (FD)
2016	CHE F311 Kinetics & Reactor Design (FD)	CHE F241Heat Transfer (FD)
	CHE F213 Chemical Engineering Thermodynamics (FD)	CHE G641Reaction Engineering (HD)
2015	CHE F311 Kinetics & Reactor Design (FD)	CHE F241Heat Transfer (FD)

	CHE G622 Advanced Chemical Engineering Thermodynamics (HD)	CHE G641Reaction Engineering (HD)
2014	CHE F311 Kinetics & Reactor Design (FD)	CHE F241Heat Transfer (FD)
	CHE G622 Advanced Chemical Engineering Thermodynamics (HD)	CHE F244 Separation Processes – 1 (FD)
2013	CHE F311 Kinetics and Reactor Design (FD)	CHE F241Heat Transfer (FD)
	CHE F314 Process Design Principles – 1 (FD)	CHE F343 Process Design Principles – 2 (FD)
2012	CHE G622 Advanced Chemical Engineering Thermodynamics (HD)	CHE C312 Kinetics and Reactor Design (FD)
	CHE C311 / CHE F213 Chemical Engineering Thermodynamics (FD)	CHE F242 Numerical Methods for Chemical Engineers (FD)
2011	CHE G622 Advanced Chemical Engineering Thermodynamics (HD)	CHE C312 Kinetics and Reactor Design (FD)
	CHE C311 Chemical Engineering Thermodynamics (FD)	CHE G521 Mathematical Methods in Chemical Engineering (HD)
2010	CHE C311 Chemical Engineering Thermodynamics (FD)	CHE C312 Kinetics and Reactor Design (FD)
	CHE G541 Process Plant Simulation (FD / HD)	CHE G541 Process Plant Simulation (FD)
	CHE C414 Transport Phenomena (FD)	*******
2009	CHE G541 Process Plant Simulation (FD)	CHE G541 Process Plant Simulation (FD)
	CHE GC473 Advanced Process Control (FD)	CHE G542 Computational Transport Phenomena (HD)
2008	CHE G541 Process Plant Simulation (FD)	CHE C441 Process Control (FD)
	CHE C351 Heat Transfer Operations (FD)	CHE G541 Process Plant Simulation (FD)
2007	CHE GC311 Chemical Engineering Thermodynamics (FD)	CHE GC441 Process Control (FD)
	CHE GC414 Transport Phenomena (FD)	CHE GC414 Transport Phenomena (FD0

	CHE GC473 Advanced Process Control (FD)	CHE GC432 Computer Aided Process Plant Design (FD)
2006	CHE GC311 Chemical Engineering Thermodynamics (FD)	CHE GC441 Process Control (FD)
	TA GC 222 Measurement Techniques – 2 (Multi-Disciplinary): FD	CHE GC312 Kinetics and Reactor Design (FD)
2005	Computer Programming – 1 (Multi-Disciplinary): FD	CHE GC221 Chemical Process Calculations (FD)

A.2 First Degree Projects Supervised

Year	Type of project	Number of students supervised
2006 – 2007 (2nd Semester)	Study oriented projects	5
	Computer projects	3
2007 – 2008 (2nd Semester)	Study oriented projects	6
	Computer projects	3
	Lab oriented projects	1
2008 – 2009 (1st Semester)	Lab oriented projects	1
	Technology Innovation Centre projects	5
2008 – 2009 (2nd Semester)	Technology Innovation Centre projects**	6
2009 – 2010 (1st semester)	Technology Innovation Centre projects	11
	Special Projects	1
2011 – 2012 (1st and 2nd Semester)	Special Projects	9
2012 – 2013 (1st and 2nd Semester)	Special Projects	6
2013 – 2014 (1st and 2nd Semester)	Special Projects	6
2014 – 2015 (1st and 2nd Semester)	Study Projects	1
	Lab Projects	3
	Design Projects	5
	Special Projects	1
2016 – 2017 (1st and 2nd Semester)	Design Projects	1
	Lab Projects	8
	Special Projects	2
2017 – 2018 (1st Semester)	Study Projects	3
	Lab Projects	6
2021 – 2022 (2nd Semester)	Study Projects	3
	Design Projects	5

2022 – 2023 (1st Semester)	Study Projects	3
	Design Projects	1
2023 – 2024 (1st Semester)	Study Projects	1

A.3 Pedagogic initiatives taken over the years

1. Transport Phenomena course (CHE F414) teaching was supported by training on COMSOL software for modelling. An additional unstructured additional 4 hours per week was allocated for the students for this purpose. Hands-on training was provided. Today this is an accepted practice for this course.

2. First Degree students in their final year were also taught Process Simulation (CHE G541) using CHEMCAD software (for which additional unstructured 4 hours was allocated per week). Hands-on training was provided.

3. I had initiated and co-ordinated a field visit in 2007 for Chemical Engineering students to Solaris Chem Tech, Karwar, providing exposure to students on Chemical plant operations on a large scale (beyond the classroom)

4. I had initiated special expert lectures series in relation to the course on Corrosion Engineering by Prof. A. S. Khanna (IIT Mumbai) from 17th to 21st October 2008.

5. The following aids were used by me during teaching: OHP / PowerPoint presentation. Both these aids were used to supplement blackboard teaching.

6. First Degree course teaching was backed up by the use of unstructured labs and real time applications. For e.g. students were shown the air conditioning system of my car and the Institute to understand the underlying principles thermodynamics of refrigeration and its application for the Course " Chemical Engineering Thermodynamics"

7. T**he concept of "You Tube day" as pedagogic tool was tested in the course on Kinetics and Reactor Design and evaluate the response of students through Five question Survey**

"You tube day" was piloted every Friday for Kinetics and Reactor Design course. Student teams were formed and each team was asked to present a video on a pre-chosen topic, for e.g. Bhopal gas tragedy, Diabetes etc. Through an open ended question session after one team presentation every Friday, the students were asked to relate the videos to course content taught in class. Students were actively engaged in a dynamic manner and were able to grasp the contents better. In addition they were able to identify the link between several other courses taught earlier and its implications on Kinetics.

A.4 Curriculum and Laboratory Development for First Degree / Higher Degree Students

I was part of the Institute level Department Curriculum review which subsequently resulted in framing of new courses and a new curricular structure for the First and Higher Degree Programs in Chemical Engineering on par with top Universities in the country and worldwide. Our curriculum was benchmarked with Universities like MIT, NUS, IITs' etc. and changes incorporated. Our Department under my headship was only one to opt for and implement a one year Dissertation for Higher Degree students (which otherwise is normally a Semester). We are the only Department to teach Maths and Chemistry to its students separately (Numerical Methods for Chemical Engineering & Engineering Chemistry). Our laboratory structure was revamped under my supervision and is presently offered as two separate 3 unit courses namely CEL – 1 and CEL – 2 respectively. This has resulted in better student to experiment ratios (3 or 4:1) as against the then prevalent 6 or more:1 (when labs were associated as part of a course).

Since 2006, as Group Leader of Chemical Engineering Group, I have coordinated activities for setting up Chemical Engineering Laboratories. I have been involved in lab development right from the conceptual stage of preparing layouts and installing electrical and water supply facilities to rooms allotted for lab purposes. In addition, I have overseen and been involved in activities pertaining to selection, procurement, installation and commissioning of relevant furniture, glassware, chemicals, computational hardware and equipment for relevant labs. The following labs (structured and unstructured) have been developed by me:

a. Measurement Techniques – 2 (structured)

b. Heat Transfer Operations (structured)

c. Selected Chemical Engineering Operation (structured)

d. Mass Transfer Operations (unstructured)

e. CAD lab for COMSOL Multiphysics and CHEMCAD training (unstructured)

It is worth mentioning here that 30 licenses of CHEMCAD (amounting to approximately Rs. 6,00,000/-) have been procured from my externally funded research project. The software is presently been successfully used by First Degree students for training purposes and projects.

As Head of Department of Chemical Engineering from 2010, I was involved in development of the Process Engineering Technology (PET) Lab in the Department of Chemical Engineering. This lab houses equipment related to academic and research activities in the Department. I have been involved right from the conceptual stage of preparing layouts and installing electrical and water supply facilities to the room allotted for this purpose and also coordinated with faculty colleagues in development of CEL-1 and CEL -2 labs in the Department.

I as HOD of Chemical Engineering was involved in framing of a proposal for seeking funds under the FIST programme of DST. The application was successful and subsequently I have coordinated development of the FIST Lab in the Department for studies on Phase equilbrium. Joint funding to the tune of Rs. 62 lakhs was received under this scheme.

Presently as HOD Chemical Engineering, I am overseeing activities with regard to revamping of Chemical Engineering Laboratories.