BHARATIYA VIDYA BHAVAN'S

SARDAR PATEL COLLEGE OF ENGINEERING

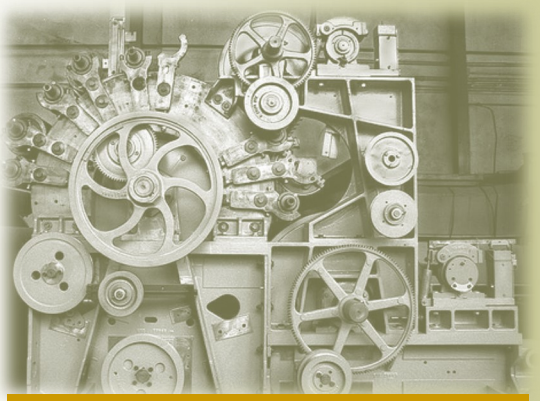
(Government Aided Autonomous Institute)

website: http://www.spce.ac.in

Mechanical Engineering Department

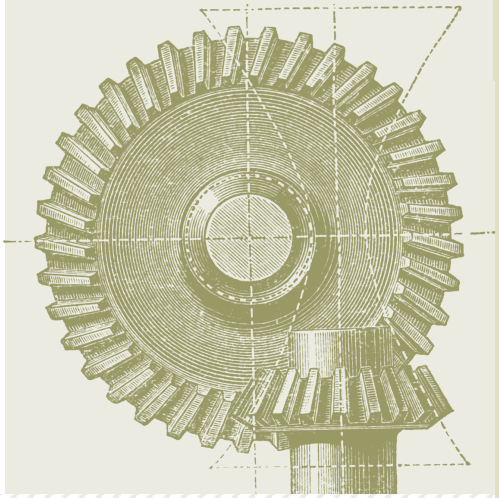
Annual Report

Academic Year 2015-16



Report Highlights

- Academic Programmes
- Research and Laboratories
- TEQIP II activities
- Industry-Institute Interaction
- Student Activities



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CONTENTS

Our Inspirations

Dr. P. H. Sawant

Professor & Principal - SPCE, Andheri

Dr. M. M. Murudi

Professor & Vice Principal - SPCE, Andheri.
TEQIP Coordinator

1. Message from Head of Department

It gives me great pleasure to share the Annual Report 2015-16 for the Mechanical Engineering Department (MED), Sardar Patel College of Engineering (SPCE). The department has taken significant steps for moving towards its vision of producing responsible and competent engineering graduates and to meet the expectation of its stakeholders.

The department is committed towards improvements in its education and research resources. The department has been implementing initiatives to strengthen the process of Outcome Based Education (OBE): updating of curricula, experimenting with new teaching and learning methods, fine-tuning assessment procedures to promote OBE, to name as few. We regularly take feedbacks from our stakeholders: students, parents, alumni and industry to guide us in this process. The forthcoming NBA and NAAC accreditation evaluations will reaffirm our academic system against global benchmarks.

I am happy to state that the department has been effectively utilizing the academic autonomy for its growth. The autonomy has allowed us to keep our programs academically up to date. Other practices which evolved through autonomy are: freedom to faculty to apply new teaching methods, provision of department calendar, documentation of departmental procedures, etc. As in the past, the department has taken pronounced role within SPCE to utilize TEQIP funds constructively. The report covers activities under TEQIP, such as, modernization of laboratories and workshop, training of faculty, funding of research projects and enhanced industry interaction.

The Industry institute interaction has been a core area where department has taken major steps to keep our academic programmes modern and relevant. This has led to establish SPCE as a recognised brands in leading industries. This brand has helped us to reach broader sections of industry. This year we signed MOUs with 5 industries for academic and research collaboration. This report showcases the industry interaction initiatives such as industry-expert lectures, industry visits, internships, sponsored UG/PG projects and corporate training programs.

The department has been part of institutional reforms and good governance practices. The department functions are organized under committees such as subject board, subject group advisory boards, etc. In addition, faculty from department are active members of institute level committees.

Learning and development needs of students are of prime importance to us. We believe in providing opportunities to our students to seek knowledge beyond textbooks and classroom lectures. Specialized student-centric training workshops, industry supported projects, innovation networking projects, internships and seminars provide such opportunities. Students passionately participate and excel in national level technology competitions like SAEINDIA, SUPRA/BAJA, ROBOCON, and Go-karting championship. Department conducted student focussed trainings, for example, digital manufacturing, MEMS and IOT. Many working professionals from industry delivered expert lectures to extend the students' learning experience. Our faculty members too conducted corporate training courses for the industry. Training courses were arranged during the year for upgrading knowledge of supporting staff. We continue to support weak performing students through initiatives such as remedial coaching and mentorship program.

Prof. S. K. Maiti, IIT Bombay, has been senior research advisor for the department. Both faculty and students have been benefited through his immense experience. Research publications produced by the department in this year show a healthy trend.

The excellent academic performance of our students is evident through the pages of this report. I am happy to note that a number of undergraduate students are opting to pursue postgraduate studies. Campus placement scenario is satisfactory with almost all students getting recruited. Our alumni continue to support their alma mater while performing splendidly in their fields.

As in the past, the departmental faculty and staff community enthusiastically participated in celebrating social events like birthdays of their colleagues and festivities like Dassera puja.

I am excited to foresee many excellent opportunities for the growth of the department in near future. We are setting up postgraduate research laboratory to meet demands of current PG programmes. A FMS laboratory and EDM facility is planned to augment proposed PG programme on Computer Integrated Manufacturing. We are moving towards paperless office through DSPACE, a new electronic repository for central storage and easy retrieval of departmental data and MOODLE, for providing digital teaching space. I am confident that we can certainly meet the challenges of future with the team spirit and support from the motivated people of the department.

I thank all the faculty members and staff colleagues for their efforts to deliver impressive performance and achieving significant growth of the department. I thank you for reading and for your interest.

Dr. R. B. Buktar
Head of Mechanical Engineering Department

2. Vision and Mission Statements for Department

Vision

To be a nationally recognized mechanical engineering department producing a blend of responsible and competent engineering graduates with inculcation of human values in next five years.

Mission

- To impart need based technical education by designing curriculum in collaboration with stakeholders
- To develop linkages with renowned industries in India and abroad for excellence in teaching & research
- To provide state of art laboratories to impart field knowledge to mechanical engineering students
- To encourage the students to participates in extracurricular activities for overall personality development and be a responsible person of the society.

3. Program Educational Objectives (PEOs)

B. Tech. (Mechanical)	M. Tech. (Thermal Engineering)	M. Tech. (Machine Design)
I. Graduates will apply knowledge gained in engineering to improve lives and subsistence through a successful career in mechanical engineering and other interdisciplinary fields	I. Graduates will apply knowledge gained in engineering to improve lives and subsistence through a successful career in Thermal Engineering and associated fields	I. Graduates will apply knowledge gained in engineering to improve lives and subsistence through a successful career in Design Engineering and associated fields
II. Graduates will become entrepreneurs, innovators and researchers to address social, technical and business challenges.	II. Graduates will become academicians, researchers and consultants to address social, technical and business challenges.	II. Graduates will become academicians, researchers and consultants to address social, technical and business challenges.
III. Graduate will engage in lifelong learning such as higher studies, research and other continuous professional development activities.	III. Graduate will engage in lifelong learning such as higher studies, research and other continuous professional development activities.	III. Graduate will engage in lifelong learning such as higher studies, research and other continuous professional development activities.

4. Program Outcomes (POs)

B. Tech. (Mechanical)

After successful completion of B.Tech. (Mechanical Engineering) programme, the graduate will have :

a) An ability to apply knowledge of mathematics, science and mechanical engineering.

b) An ability to identify, formulate, solve and draw appropriate conclusions of complex mechanical engineering problems.

c) An ability to design and develop a system or process to meet desired needs with appropriate considerations such as economic, environmental, social, ethical, manufacturability, sustainability, health, safety, legal and cultural.

d) An ability to design and conduct experiments with given constraints analyse and interpret data for complex engineering problems having multiple possible solutions.

e) An ability to use the techniques, skills and modern engineering tools such as CAD, analysis and simulation tools necessary for engineering practice.

f) Responsiveness towards professionalism and ethics.

g) An ability to function on multidisciplinary teams

h) An ability to communicate effectively.

i) An ability to demonstrate the knowledge of engineering and management principles and apply these to manage the projects and its financial aspects.

j) An ability to engage in lifelong learning.

M. Tech. (Thermal Engineering)

After successful completion of M.Tech. (Thermal Engineering) programme, the graduate will have :

a) Extensive knowledge of Thermal Engineering discipline with an ability to associate this learning to identify, assess, analyse and integrate new knowledge areas and contribute towards enrichment of the disciplinary knowledge.

b) An ability to perform investigation of complex engineering problems by applying both analytical and creative thinking and arrive at wide range of potential solutions and further evaluate them considering public health and safety, cultural, societal and environmental factors.

c) A skill to undertake research by applying appropriate research methodologies such as literature survey, design/ conduct of experiments, analysis and interpretation of data and conceptualise solutions that leads to scientific/ technological development.

d) An ability to create, apply and adapt techniques using modern engineering and IT tools for modelling and analysis of engineering systems.

e) An ability to communicate effectively and to function in collaborative-multidisciplinary team activities.

f) An ability to demonstrate knowledge of engineering and management principles and apply these to manage projects and its financial aspects.

g) To continuously do independent and reflective learning in order to improve upon one's skills and abilities and to engage in lifelong learning.

h) Responsiveness towards development of society, professionalism and ethics.

M. Tech. (Machine Design)

After successful completion of M.Tech. (Machine Design) programme, the graduate will have :

a) Extensive knowledge of Machine Design discipline with an ability to associate this learning to identify, assess, analyse and integrate new knowledge areas and contribute towards enrichment of the disciplinary knowledge.

b) An ability to perform investigation of complex engineering problems by applying both analytical and creative thinking and arrive at wide range of potential solutions and further evaluate them considering public health and safety, cultural, societal and environmental factors.

c) A skill to undertake research by applying appropriate research methodologies such as literature survey, design/ conduct of experiments, analysis and interpretation of data and conceptualise solutions that leads to scientific/ technological development.

d) An ability to create, apply and adapt techniques using modern engineering and IT tools for modelling and analysis of engineering systems.

e) An ability to communicate effectively and to function in collaborative-multidisciplinary team activities.

f) An ability to demonstrate knowledge of engineering and management principles and apply these to manage projects and its financial aspects.

g) To continuously do independent and reflective learning in order to improve upon one's skills and abilities and to engage in lifelong learning.

h) Responsiveness towards development of society, professionalism and ethics.

5. Overview of Academic Programs

5.1 Programs Offered

Academic Programme	Specialization	Duration	Intake
Undergraduate			
Bachelor of Technology (B.Tech.)	Mechanical Engineering	Four Years	60
Postgraduate			
Master of Technology (M.Tech.)	Machine Design	Two Years	18
Master of Technology (M.Tech.)	Thermal Engineering	Two Years	18
Doctor of Philosophy (Ph.D.)	Mechanical Engineering	NA	60

5.2 Accreditation Status

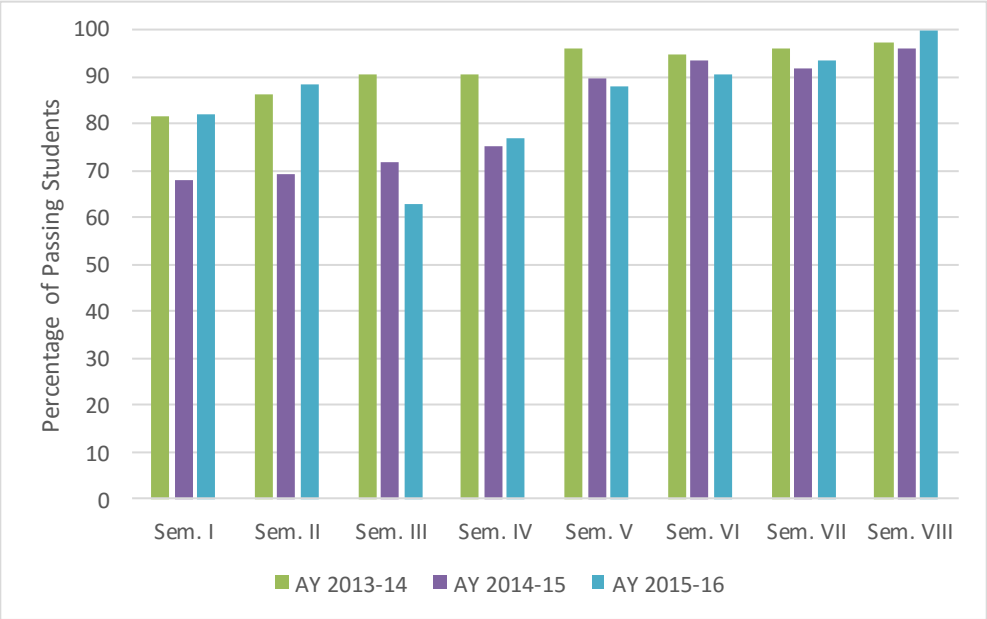
UG program: Accredited for 2004-2007, re-Accredited 2008-2011. Applied for Accreditation in the year 2011. Due to revision in the format applied in Tier I again as per the requirements of TEQIP. Last date of submission of e-SAR is October 2015.

PG programs: Applied in Tier I as per the requirements of TEQIP and E-SAR uploaded in July 2015.

6. Department Financial Data (Figures in Rs.)

	Expenditure 2015-16	Budget 2016-17
UG (Laboratories)	698,621	1,002,600
PG (Machine Design)	1,667,786	2,082,220
PG (Thermal Engineering)	921,818	2,082,220
Ph.D.	1,098,531	938,610

7. Trends and Statistics—Result Analysis (UG)



Percentages of passing undergraduate students in each semester of the courses are as shown in the chart for current and past two academic years.

The percentage of passing students are in the range of 60 to 100 % across different semesters. The average performance in final semesters is better as compared to earlier semesters.

8. Faculty and Staff

8.1 Faculty

1) Dr. Rajesh Buktar
B.E. (Mech.), M.E. (CAD/CAM), Ph.D. in Technology
Head of Department and Professor
17 years of Experience
Research Area: IT enabled Technology Integration in Indian Auto Component Industries

2) Dr. Nilesh R. Raykar
B.E. (Mech.), M.Tech. (Design Engg.) Ph.D. (IITB)
Professor
19 years of industry + 4 years teaching Experience
Research Area: Hydrogen assisted stress corrosion cracking, Pressure Equipment Design.

3) Prof. Dattatray N. Jadhav
B.E. (Mech.), M.Tech. (Machine Design)
Pursuing Ph.D
Associate Professor
21 years of Experience
Research Area: Fracture Mechanics,FEM, Stress Analysis.

4) Dr. Kiran Suresh Bhole
B.E.(Mech), ME(Production), PhD (IITB)
Associate Professor
17 years of experience in teaching
Research Area: Microfabrication, Additive Manufacturing, MEMS, Flexural Systems.

5) Dr. R.S. Maurya
B.E. (Mech.), M.E. (Thermal), PhD in Thermal Engineering
Assistant Professor
25 years of Experience
Research Area: Thermo-fluid, CFD Analysis Interface Tracking

6) Dr. S.B. Rane
B.E. (Mech.), M.E. (Machine Design), PhD (Technology)
Assistant Professor
22 years of Experience, Master Black Belt in Lean six sigma
Research Area: Supply Chain Mgmt., Lean Six Sigma, Production Management

7) Dr. Sudhakar Umale
B.E. (Mech.), M.E. (Machine Design), PhD in Progress
Assistant Professor
26 years of Teaching Experience
Research Area: Material Technology

8) Shri P.K. Muley
B.E. (Mech.), M.E. (Thermal), PGDIM
Pursuing Ph. D. at IIT Bombay (Thermal Engineering)
Assistant Professor
10 years of Industry Experience, 12 years teaching
Research Area: Thermal Engineering

9) Ms. Megha Sukhdeo Janbandhu
B.E. (Mech.), M.E. (Machine Design)
Assistant Professor
04 years of Experience
Research Area: Machine Design, CAD/CAM/CAE

10) Shri Sachin Vankar
B.E. (Mech.), M.E. (CAD/CAM)
Assistant Professor
13 years of Experience
Research Area: CAD/CAM

11) Shri Kunal Bhavsar
B.E. (Mech.), M.E. (Thermal Engineering)
Workshop Superintendent
03 years of Experience
Research Area: Computational Fluid Dynamics (CFD), Vortex Refrigeration, HVAC, Thermal Energy Storage

12) Shri Balwant N.Bhasme
B.E. (Mech.), M.E. (Machine Deisgn)
Pursuing Ph.D at IITB (Aerospace Engg)
Assistant Professor
16 years of Experience
Research Area: Research Area: Control of separated flows, Experimental and computational aerodynamics, New refrigerants.

13) Mr. Sharad Valvi
B.E. (Mech.), M.Tech (CAM),
Assistant Professor
1.5 years of Experience
Research Area: friction stir welding, welding technology

14) Mr. Haseen Shaikh
B.E. (Mech.), M.Tech. (Manufacturing Engg),
Assistant Professor
3 years of Experience
Research Area: Machining (Diamond turning) of single crystal optical materials

8.2 Ad-Hoc and Visiting Faculty

1) Prof. D. K. Chawla
B.E. (Mech.), M.E. (Mech)
Visiting Professor
49 years of Teaching experience
Research Area: Machine Design, Tribology

2) Dr. Roshini Easow
B.E.(Mech), M.Tech. (Thermal), PhD (Thermal)
Visiting professor
32 years of experience in teaching
Research Area: Thermal Engineering

3) Prof. Mohandas Varier
B.E., M.E. (Production)
Adhoc Associate Professor
47 years of Teaching + industry experience
Research Area: Manufacturing

4) Ms Chetana Sharma
B.E.(Mech),MHRM, M.Tech. (Manufacturing)
Adhoc Assistant Professor
05 years of experience in teaching
Research Area: Manufacturing Engineering / Industrial Engineering

5) Mr. Akash Bidwaik
B.E.(Mech), M.Tech. (Thermal Engineering)
Adhoc Assistant professor
04 years of experience in teaching
Research Area: Thermal Engineering

8) Mr. Greegory Mathew
B.E.(Mech), M.Tech. (M/c Design)
Adhoc Assistant professor
02 years of experience in teaching
Research Area: Machine Design

9) Mr.Rohit D. Deshpande
B.E.(Mech),MHRM, M.Tech. (Production Engineering)
Adhoc Assistant Professor
01 years experience in teaching
Research Area: Production Engineering

10) Mr. Shrikant Baste
B.E. (Mech.), M.E. (Thermal Engineering)
Adhoc Assistant Professor
01 years of Teaching experience
Research Area: Thermal Engineering
: Production Engineering

9) Mr. Sagar Patil
B.E. (Mech.)
Adhoc Assistant Professor
0.5 years of Teaching experience
Research Area: Machine Design

10) Mr. Gangaprasad Shirale
B.E. (Mech.)
Adhoc Assistant Professor
0.5 years of Teaching experience
Research Area: Machine Design

11) Mr. Ashishkumar Vajir
B.E. (Mech.)
Visiting Assistant Professor
0.5 years of Teaching experience
Research Area: Machine Design

8.3 Supporting Staff

1. SHRI. R.B.KENI
CHARGEMAN

2. SHRI.S.M.SHETKAR
CARPENTER INSTRUCTOR

3.SHRI.N.S.GAIKAWAD
WELDING INSTRUCTOR

4. SHRI.P.M.LOHAR
SMITHY INSTRUCTOR

5. SHRI.LUIS P.DIAS
ENGINE ATTENDANT

6. SHRI.A.A.KALE
LAB ASSISTANT

7. SHRI. P.V.RAJE
LAB ASSISTANT

8. SHRI.KUMAR SHINDE
GENERAL MECHANIC

9. SHRI.NILESH KELKAR
FITTING INSTRUCTOR

10. SHRI. S.B. KOLAPATE
LAB ATTENDANT

11. SHRI.M.L.KHAMKAR
LAB ATTENDANT

12. SHRI.D.L.PARAB
LAB ATTENDANT

13. SHRI.M.L.RANE
LAB ATTENDANT

14. SHRI.M.T. BHANGARE
LAB ATTENDANT

15. SHRI.ARIF KAZI
LAB ATTENDANT

16. SHRI. JAFAR PATEL
LAB ATTENDANT

17.SHRI.VASANTHKUMAR H.S.
HAMAL

18. SHRI.G.P.JADHAV
HAMAL

19. SHRI N.N.KAMBLE
HAMAL

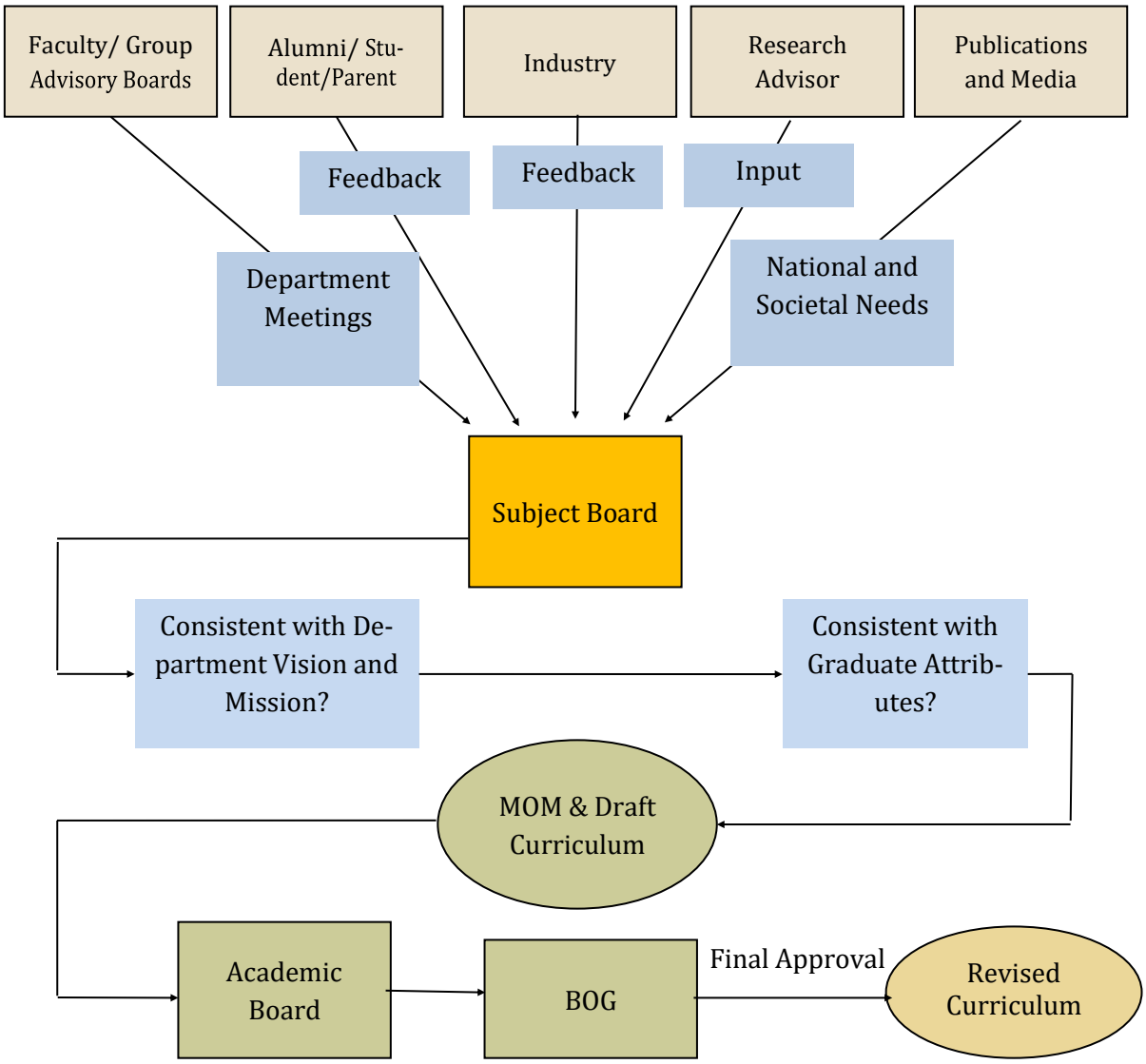
9. Departmental Committees

9.1 Subject Board

Sr. No.	Nominee	Name of Nominees	Affiliation
1	Head of Department	Dr. R. B. Buktar	SPCE
2	Head of the Univ. Dept. or his nominee	Dr. A. W. Date	IIT Bombay
3	Two Senior Teachers	Dr. R. S. Maurya Shri. D. N. Jadhav	SPCE SPCE
4	Subject Experts	Dr. K. P.Karunakaran Dr. N. B. Kulkarni Dr. Barun Chakrabarti	IIT Bombay Toyo Engineering L&T Powai
5	Professional Experts	Shri. T. Navalkar Shri. J. T. Kshirsagar	DFX Systems, Mumbai Kirloskar Brothers Ltd.
6	Students	Shri. S. Shetty Shri. S. Ghuge	SPCE SPCE

The Subject Board is the basic constituent of the academic system of an autonomous college. Its functions include framing the curricula for various courses, reviewing and updating curricula from time to time, introducing new courses of study, determining details of continuous assessment, recommending panels of examiners under the semester system, etc.

The working process of Subject Board for curriculum development is as follows.



9.2 Subject Group Advisory Board

The department has 3 Subject Group Advisory Boards to facilitate focused development of curriculum in core specialization areas of Mechanical Engineering. The constitution of these boards is as follows.

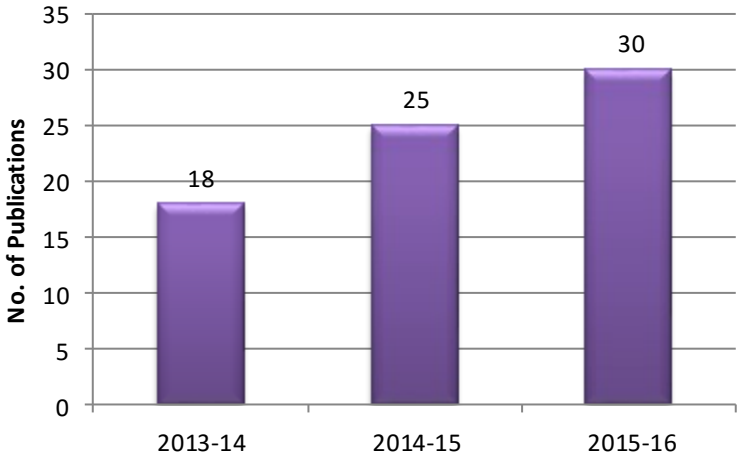
Thermal Engineering	Design Engineering	Manufacturing Engineering
Dr. R. S. Maurya	Dr. R. B. Buktar	Dr. K. S. Bhole
Dr. S. S. Umale	Dr. N. R. Raykar	Dr. S. B. Rane
Prof. P. K. Mule	Prof. D. N. Jadhav	Prof. S. R. Vankar
Prof. B. N. Bhasme	Prof. Megha Janbandhu	Prof. H. M. Shaikh
Prof. K. Y. Bhavsar		Prof. Sharad Valvi

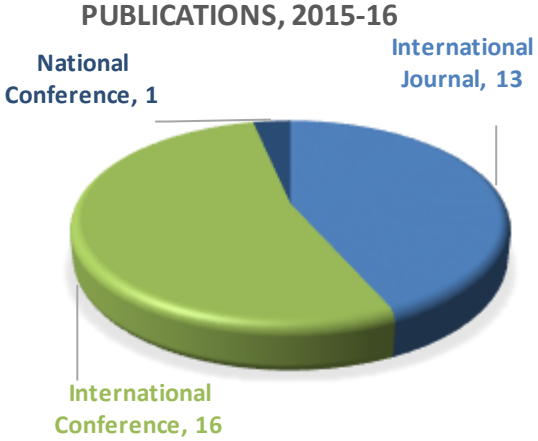
10. Faculty Representation on Institutional Committees

The departmental faculty has representation on various Institutional committees as follows.

Institutional Committee	MED Representative
Board of Governors	Dr. R.B. Buktar, Dr. N. R. Raykar
Academic Board	Dr. R. B. Buktar, Dr. R. S. Maurya
Examination Committee	Prof. D. N. Jadhav
Institute Development Committee	Dr. R. B. Buktar, Dr. R. S. Maurya, Dr. S. B. Rane, Prof. D. N. Jadhav
Research & Resource Generation Committee	Dr. R. S. Maurya, Dr. S. B. Rane
Information Committee	Prof. B. N, Bhasme, Prof. K. Y. Bhavsar
Building and Works Committee	Prof. D. N. Jadhav
Disciplinary Committee	Dr. S. B. Rane, Dr. S. S. Umale, Prof. B. N. Bhasme
Industry Interaction Cell	Dr. N. R. Raykar, Prof. S. R. Vankar
Library Committee	Prof. S. R. Vankar
Student Welfare and Extra-curricular Activities Committee	Prof. B. N. Bhasme
Internal Audit Committee	Dr. S. B. Rane
Alumni Committee	Dr. R. B. Buktar, Prof. S. R. Vankar
Women Development Cell	Dr. S. S. Umale
Grievance Committee	Prof. S. R. Vankar, Shri Luis Dais
TEQIP Committee	Dr. R. B. Buktar, , Prof. D. N. Jadhav, Dr. R. S. Maurya, Dr. S. B. Rane

11. Faculty Research Publications





	International Journal
1	Samane S.S., Umale S.S., Numerical Investigation of Stress Generated in High Pressure Heat Exchanger, IJESRT, Vol. 5, Issue 6, 2016.
2	Umale S.S., Warke A., Ganacharya A., Design, Development and manufacturing of Pedal operated metal cutting machine, IJLEMR, Vol. 01 , Issue 3, 2016.
3	Rakate Y.B., Bhavsar K., Umale S.S., Experimental and Numerical analysis of heat transfer augmentation through a pipe using twisted tapes, International Journal for Innovative Research in Science & Technology,Vol. 2, Issue 10, 65-71, ISSN 2349-6010, March 2016.
4	Yawalkar B.B., Umale S.S., Study of Energy Conservation of Industrial Boiler and Steam System, IJERST, Vol.4, Issue 3, 2015.
5	Meher S., Umale S.S., Heat Load and Air Circulation Analysis of Diesel Engine Compartment, IJISET, Vol.2, Issue 7, 2015.
6	Omkar Patil and R. S. Maurya, 'Film Condensation Behaviour of Steam on Isothermal Walls in Presence of Non-Condensable Gases -A Numerical Investigation'. International Journal of Computational Engineering Research, Volume 06, Issue 05, May 2016.
7	M S Tawade and R S Maurya, Numerical study of flow structure developing around double suction pipe of a pumping system, Procedia Engineering, 127, pp 809-815, 2015.
8	H Epte and R S Maurya, Pipe network analysis of a complex flow system using PIPENET – a case study, International Journal of Mechanical Engineering and Technology, Vol. 6, no. 9, pp 51-60, 2015.
9	Mukund R Valse and R S Maurya, Numerical Investigation of heat transfer and flow characteristic of air jet impingement over heated tube, International Journal of Mechanical and Industrial Technology, Volume 3, No. 2, pp 7-15, 2015.
10	Santosh B Rane, Milind S Kirkire, "Analysis of barriers to medical device development in India: an interpretive structural modelling approach", International Journal of System Assurance Engineering and Management, Published on 14 th June 2016
11	Santosh B Rane , Yahya Narvel, "Reliability Assessment and Improvement of Air Circuit Breaker (ACB) Mechanism by Identifying and Eliminating the Root Causes", International Journal of System Assurance Engineering and Management
12	Santosh B Rane, Milind S Kirkire, "Interpretive structural modelling of risks in medical device development process", International Journal of System Assurance Engineering and Management
13	J. R. Jadhav, S. S. Mantha, Dr. Santosh B. Rane, "Supply Risks in JIT Implementation", International Journal of Business Performance and Supply Chain Modelling, Vol. 7, No. 2, 2015

	International Conference
1	Meshram, S., Valvi, S., & Raykar, N., "A Cost-effective Microcontroller based Sensor for Dual Axis Solar Tracking" International Conference on Renewable Energies and Power Quality (ICREPQ'16) Madrid (Spain), 4th to 6th May, 2016 Renewable Energy and Power Quality Journal (RE&PQJ),ISSN 2172-038 X,
2	Raul A, Bhasme B.N., Maurya R.S., "A Numerical Investigation of Flow Maldistribution in Inlet Header Configuration of Plate Fin Heat Exchanger",5 th International Conference on Advances and Energy Research, IIT Bombay, December 2015, pp 776-782
3	Bhole K.S., 'Bulk Lithography: An Alternative Way for Developing Three-Dimensional Free Formed Micro-Structures in Single Laser Scan', 5 th International Conference on Additive Manufacturing Technologies – vol. 1, AM15-25, 2015.
4	Appasaheb Raul, B Bhasme and R S Maurya, A numerical investigation of flow maldistribution in inlet header configuration of plate fin heat exchanger. Proceeding of 5th International Conference on advances in energy research (ICAER-15), 15-17 December 2015, IIT Mumbai.
5	Rushikesh Kekare and R S Maurya, Development of heat transfer and pressure drop characteristics for a plate type offset fin compact heat exchanger using numerical investigation methodology. Proceeding of 5th International Conference on advances in energy research (ICAER-15), 15-17 December 2015, IIT
6	Maradkar Rohit R. and Maurya R. S., Design and development of energy efficient cold storage interior using computational techniques, 6 th International Congress on Computational Mechanics and Simulation (ICCMS 2016), IIT Bombay, Mumbai, India, June 27
7	Mohammad Rafiq B. Agrewale and Maurya R. S., Numerical investigation of evolving flow structure around Ahmed body mounted with solar panel of different configuration, 6 th International Congress on Computational Mechanics and Simulation (ICCMS 2016), IIT Bombay, Mumbai, India, June 27
8	Kane A. A., Maurya R. S., Tiwari I., and Lobo S., Characterization of flow and thermal behaviour of product gas constituents in the throat-less downdraft gasifier, 6 th International Congress on Computational Mechanics and Simulation (ICCMS 2016), IIT Bombay, Mumbai, India, June 27-July 1, 2016.
9	Dr Santosh Rane, Dr Arwind Ankalikar, Prathamesh Potdar, Mr. Yahya Narvel, "Fleet Utilization Improvement by Real Time Fleet Health Monitoring: A Case study of Asset Propelled Industry", Int. Conf. on "Advances in Mechanical Engineering-2016" (ICAME-16), G.H. Raisoni College of Engineering, Nagpur from
10	Dr. Santosh B. Rane, Nandkumar Mishra," Integrated Business Excellence Maturity Model for Breakthrough Business Results", 3rd International Conference on Industrial Engineering (ICIE-2015), pp 395-400
11	Dr. S B Rane, M S Kirkire, "Exploring barriers to medical device development from Indian manufacturers perspective",3rd International Conference on Industrial Engineering (ICIE-2015), pp-969- 973.
12	Dr.S.B.Rane, M.A.Ahire, "Exploring Barriers in Agile Supply Chain in Healthcare", 3rdInternational Conference on Industrial Engineering ICIE2015

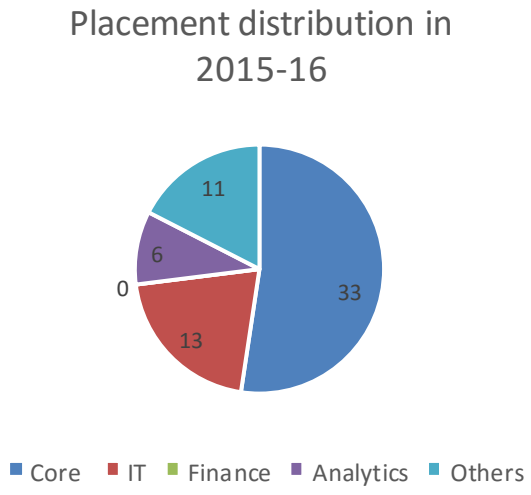
International Conference (contd.)	
13	Dr. Santosh B.Rane, Prathamesh R.Potdar, "Root Cause analysis and Product Improvement : A case study in Moulded Case Circuit Breaker Manufacturing Industry", 3rdInternational Conference on Industrial Engineering(ICIE-2015), pp 268-273.
14	Dr. S. B.Rane, S.S. Ahluwalia, S. G. Nalaskar, "The Product Development using Value Engineering Approach: The Case Study in Switchgear Manufacturing Industry", 3rdInternational Conference on Industrial Engineering(ICIE-2015) pp1181-1187
15	Rahul V. Dandage, Shankar S. Mantha, Dr. Santosh B. Rane, "Exploring Risks and Barriers to Risk Management in International Projects", 3rd International Conference on Industrial Engineering(ICIE-2015) pp 875-880.
16	Dr. S. B. Rane, Mr Ranjit A. Patil, "Handle Interlock Mechanism Development: A Reliability Perspective", International Conference On Aerospace And Mechanical Engineering (ICAME'15) 14-16 December 2015 At TKM College Of Engineering, Kerala,India , pp150-156

National Conference	
1	Deo, S.M., Bhole, K., Kulkarni, P. and Shinde, S., 'Concept of Flexure Based Mechanism for Efficient Micro Drilling', National Conference in Applied Sciences and Humanities, vol. 1, pp 32-36, 2016.

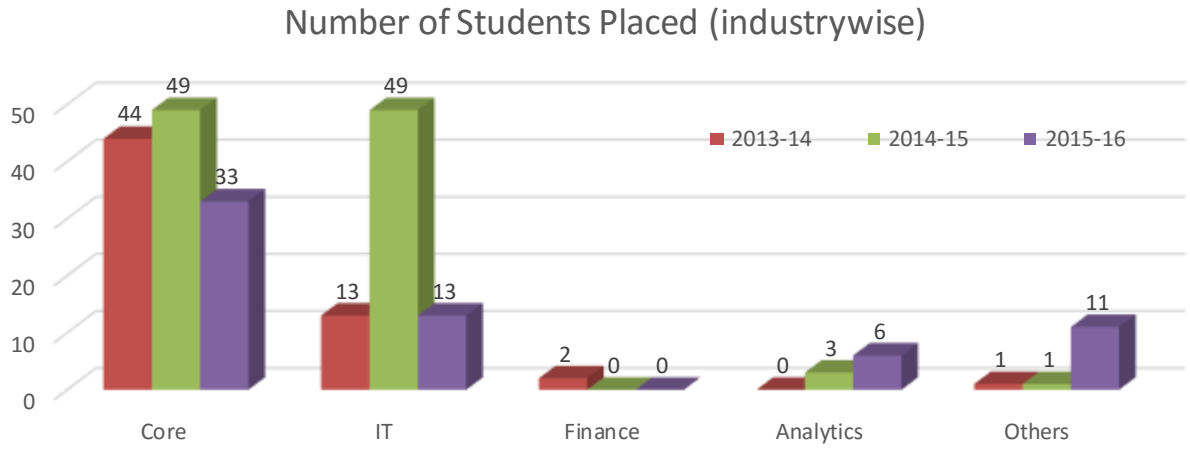
Book section / Technical Article	
1	R. S. Maurya, Using CFD in building Design, ISHRAE Journal, March-April 2016, pp.22-28(Lead Article)

12. Campus Placements

Placement Statistics (Domain wise) for B. Tech. Mechanical							
Year	Number of students placed in Company					Total offers	Higher Education Aspirants
	Core	IT	Finance	Analytics	Others		
2015-16	33	13	0	6	11	63	12
2014-15	49	49	0	3	1	102	8
2013-14	44	13	2	0	1	60	15



The analysis of campus placement data indicate significant number of graduate students being placed in core industries which is in tune with PEOs for the programme. The IT industry has been also hiring sizeable number of students, however the demand from this sector is seen to be fluctuating. Finance and analytics are other industries where a small number of students are getting placed through campus interviews. The number of offers obtained by students has been following trends of economic cycle.



13. Laboratories and Workshop

13.1 Laboratories

Sr. No.	Laboratory Name	Laboratory In-Charge
1	CAD/CAM Laboratory	Dr. R. B. Buktar
2	CNC Laboratory	Dr. R. B. Buktar
3	Computational Fluid Mechanics Laboratory	Dr. R. S. Maurya
4	Hydraulics Machinery Laboratory	Dr. K. S. Bhole
5	Internal Combustion Engine Laboratory	Prof. S. S. Umale
6	Material Science Laboratory	Prof. S. S. Umale
7	Mechatronics Laboratory	Prof. S.R. Vankar
8	Metrology and Measurement Laboratory	Dr. S. B. Rane
9	Refrigeration and Air-conditioning Laboratory	Prof. B.N. Bhasme
10	Theory of Machines and Vibration Laboratory	Prof. D. N. Jadhav
11	Thermal Engineering Laboratory	Dr. R. S. Maurya

14. Departmental Strengths and Best Practices

The Departmental strengths arise from the best practices followed. The departmental best practices have been the prime force behind the continual growth of its academic performance. These practices have been beneficial to the students and faculty in the improvement of teaching and learning processes. Some of the practices have streamlined the administrative processes within the department which has lead to significant improvement in the efficiency of these processes.

14.1 Teaching and Learning Process

- **Outcome Based Education (OBE):** The department has implemented OBE approach throughout the teaching and learning process. Each program has program educational objectives (PEOs) and program outcomes (POs) to outline its curriculum development. Each of the courses has course outcomes (COs) which map with POs. Different assessment techniques are adopted to measure the student performance and to monitor effectiveness of the course through measured values of CO and PO attainments.
- **Moodle:** The department has implemented Moodle software as a platform for personalized learning by the students. At this stage, some of the course material in digital format has been shared by faculty through Moodle for ready reference for students.
- **Innovative Networking Project:** The department in collaboration with ICT, Mumbai, has been actively participating in innovative product development projects which promote creative thinking skills in students.
- **Online Student Feedback:** The department has implemented online student feedback system. The data gathered from the system is analyzed to generate valuable feedback for the faculty to improve the teaching process.
- **Student Participation in Technical Events:** The department actively supports student participation in various technical events at national/state levels such as SAEINDIA SUPRA/ BAJA, ROBOCON, ISHRAE Chapter, etc. These events help students to develop team skills and to learn application of theory to real life situations.
- **Value Added Courses:** The department has identified following value added courses for inclusion in curriculum. i) Introduction to Composite Material., ii) Internet of Thinks., iii) PLC Base System. These courses will benefit student to gain advance knowledge in subject of their interest.
- **Elective Courses:** The department is planning to broaden the list of elective available in the curriculum following elective courses are under consideration. i) Pressure Vessel and Piping Design, ii) Tribology , iii) Introduction to Optimization, iv) Power Plant Engineering, v) Automobile Engineering - I, vi) Computational Fluid Dynamics, vii) Business Process Reengineering and TQM, viii) Product Lifecycle Management – I, ix) Industrial Robotics, x) Composite Material Technology, xi) Cryogenic Engineering, xii) Nanotechnology, xiii) Automobile Engineering - II, xiv) Supply Chanin Management, xv) Product Lifecycle Management - II, xvi) Advanced Manufacturing Methods.

14.2 Research Focus

- **Promotion to Research Activities:** The department strives to promote research contribution from both faculty and students towards quality research publications. Student projects UG and PG with focus on research in collaboration with central research organizations and industry are encouraged. The departmental research performance is monitored by Senior Research Advisor, Professor S. K. Maiti, IIT Bombay.
- **Research Project Under Seed Money Funding by TEQIP:**

Sr. No.	Investigator	Title of Research Proposal
1	Prof. D. N. Jadhav	Optimization of instrumentation needle valve based on flow coefficient and pressure temperature behavior using numerical methods
2	Dr. N. R. Raykar	Experimental investigation to impact energy of polymer composites
3	Dr. N. R. Raykar	Development of experimental setup for vibration study in academia
4	Dr. R. S. Maurya	Experimental and numerical investigation of thermal saturation phenomenon to improve the performance of earth air heat exchanger (EAHX)
5	Dr. Kiran Bhole	Design and development of experimental setup for synthesis and analysis of growth of interfacial micro fractals in non-Newtonian fluid.
6	Dr. Kiran Bhole Dr. Rajesh Buktar	Design and development of the sublimate drying based experimental setup to avoid stiction problems in post-processing of arrayed microstructure

14.3 Industry Interaction

- **Strong Industry Institute Interaction:** The department has been closely associated with industry for development of its curriculum and to make students industry ready through industrial visits, internships, guest lectures, industry sponsored projects, etc. These activities are described in more details elsewhere in this report.

14.4 Support to Weak-Performance Students

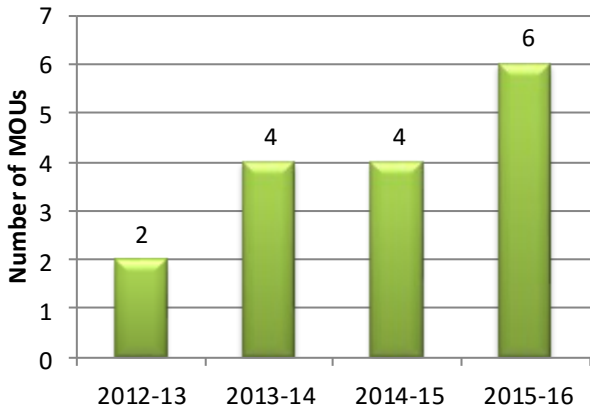
- **Remedial Coaching:** The department regularly conducts remedial coaching for students who display weak performance during in-semester assessments.
- **Mentorship:** The department provides a faculty member as a mentor to a small group of students. The students may discuss their difficulties with the mentor and obtain guidance.

14.5 Resource and Infrastructure Development

- **Updated Laboratories and Engineering Software:** The department has recently modernized many of its laboratories in order to provide the best learning tools to the students. The software tools are added and/or updated as required.
- **Faculty and Staff Development:** Faculty and staff regularly attend training programs, workshops in order to keep them abreast with latest development in their field of work.
- **Regular Updating of Department Website:** The department website is frequently updated to provide the latest information to students, faculty and external stakeholders such as industry, alumni and parents.
- **Digital Data Management:** The department aims to provide many of the sharable information in digital format through common platforms such as DSPACE, Moodle and Website.

15. Industry Institute Interaction

15.1 MOUs with Industry/Academia



Organization	Date of MOU	Areas of Collaboration
Emerson Climate Technologies	07.07.2015	• Joint research projects • Faculty and Staff Development/ Training • Guest Lectures • Industrial Visits • Promotion of Entrepreneurship • Developing Center of Excellence
Godrej & Boyce, Mumbai	13.01.2016	
Reliance Dahanu Thermal Power Station (DTPS)	13.01.2016	
Christaini Sharpline, Mumbai	13.01.2016	
Badve Engineers Limited, Pune	13.01.2016	
CADD Center, Mumbai	23.05.2016	

MOU signing with Godrej & Boyce, Mumbai: Mr. Umesh Shah (Vice President, Godrej & Boyce) and Dr. P. H. Sawant (Principal, SPCE).

MOU signing with Reliance Dahanu Thermal Power Station (DTPS): Mr. Roshan Patil (Training and Placement Officer, DTPS) and Dr. P. H. Sawant (Principal, SPCE).

MOU signing with Christiani Sharpline, Mumbai,: Mr. Chandrashekhar (Christiani Sharpline) and Dr. P. H. Sawant (Principal, SPCE).

MOU signing with Badve Engineers Limited, Pune: Mr. Kiran Inamdar (Badve Engineers) and Dr. P. H. Sawant (Principal, SPCE).

15.2 Industry Institute Meet—MED

Mechanical Engineering Department of Bharatiya Vidya Bhavan's Sardar Patel College of Engineering (SPCE) held its 2nd Industry Institute Meet on **13th January 2016** under Technical Education Quality Improvement Program (TEQIP). The main purpose of this meet was to promote the interaction between industry and SPCE for mutual benefits. The meet was organized by SPCE in collaboration with Board of Apprenticeship Training (BOAT), Western Region, Mumbai and Laghu Udyog Bharati (LUB), Thane.

The dignitaries on the dais shared their valuable experiences and thoughts about the role of industry institute collaboration in today's complex business world.

Lighting of lamp by Dr. P.H.Sawant, Principal, SPCE.

Dr. P.H. Sawant, Principal, SPCE, welcomed the guest of honor and the impressive gathering of Industry-Institute meet. He elucidated the participants about rich heritage of the institute and the pressing need of current time to orient engineering education towards industry needs. He explained the advantages of department-wise focusing on external world as per strengths and expertise of individual department while still maintaining the respect of interdisciplinary nature of industry operations.

Prof. Megha Janbandhu explained the gathering about the background and significance of 2nd Industry Institute meet organized by Mechanical Engineering Department, SPCE. She also coordinated for the smooth pro-

Dignitaries on the dais (left to right): Mr. Biren Desai, GM, TCE; Dr. M.M. Murudi, Vice-Pricipal and TE-QIP coordinator, SPCE; Ms Amrita Nanavaty, Dy. Director, Western Region, CII; Mr. Pradeep Bhosekar, Chairman—Skill Development, CII; Mr. P.N. Jumle, Director, BOAT, Western region; Dr. P.H. Sawant, Principal, SPCE; Mr. A.D. Shahane, VP—Corporate Training, L&T; Mr. Umesh Shah, Vice-President, Godrej & Boyce.

The Chief guest, Mr. P.N. Jumle, Director, BOAT (WR), emphasized tapping the natural belonging of practicing engineers to their roots, i.e., engineering colleges. He stressed the importance of having young engineers with multi-function skills which is highly valued, especially in small scale industries. While describing various measures taken by BOAT for providing employment for all strata of technical manpower, he urged the engineering colleges to find out to the current needs of industries and produce industry ready engineers.

Chief Guest Mr. P.N. Jumle, Director, BOAT

Dr. R. B. Buktar, Head of Mechanical Engineering Department.

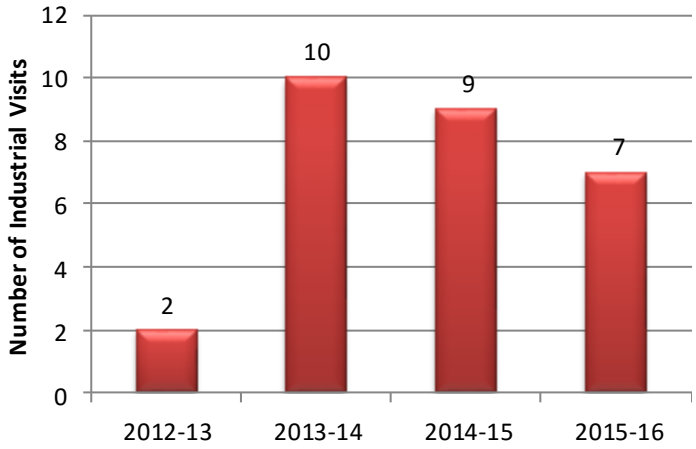
Dr. R. B. Buktar, Head of Mechanical Engineering Department, presented the strengths and resources of the department. He informed the audience about the Department's Vision, Mission and Programme Educational Objectives. He took this opportunity to thank cooperation from existing industry partners, such as, L&T, Aker Solutions, D-ESPAT, for their valuable support.

He elaborated the significant outcomes achieved through the existing industry linkages with analysis of data for past few years. He observed that the industry-interaction has resulted in increasing employability of students.

He highlighted the importance of tie-ups with BOAT and Laghu Udyog Bharati (LUB) in strengthening of department's bond with industry. Dr. R. B. Buktar, Head of Mechanical Engineering Department, presented the strengths and resources of the department. He informed the audience about the Department's Vision, Mission and Programme Educational Objectives. He took this opportunity to thank cooperation from existing industry partners, such as, L&T, Aker Solutions, D-ESPAT, for their valuable support.

Participants having discussion with industry experts

15.3 Industrial Visits Arranged Under TEQIP



Department conducted a series of focused industrial visits related to various courses. The visit adds to the practical perspective of the students related to the theory learn by them in the classroom. The visits also allow the students to directly interact with industry engineers and observe industrial practices first hand. The department has actively utilized the funds provided by TEQIP II for the benefit of the students by organizing such visits.

Industrial visit to 'Siemens' during March 2016 for T.Y.B.Tech.(M) Organized by Prof. S. B. Rane and Prof. Kunal Bhavsar.

Industrial visit to 'Eaton Fluid Power, Pimpri, Pune' during March 2016 for ISHRAE members Organized by Prof. Kunal Bhavsar and Prof. Megha Janbandhu.

Industrial visit to 'Engine Assembly and Training Institute at Mahindra' during January 2016 for T.Y.B.Tech. organized by Prof. Megha Janbandhu.

Industrial visit to 'Cold Chain Centre at Emerson' during March 2016 for M.Tech.(Thermal) organized by Prof. B.N. Bhasme.

Industrial visit to 'Reliance Dahanu Thermal Power Station' during April 2016 for M.Tech(Thermal and Machine Design) Organized by Prof. Dr. Nilesh Raykar.

Industrial visit to 'Volkswagen' during April 2016 for T.Y.B.Tech Organized by Prof. S. R. Vankar.

15.4 Industry Visit by Faculty

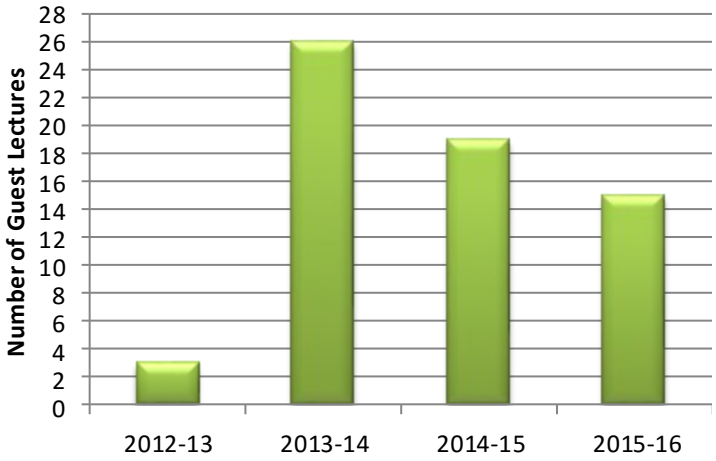
Department organized a one-day visit to **Laghu Udyog Bharti (LUB), Thane**, on 6th February 2016. The visit was aimed at establishing connection with MSME (Micro Small and Medium Enterprises) near Mumbai and to understand engineering issues and requirements of these organizations. During visit the faculty visited following organizations: HD Fire Protect Pvt. Ltd., Prasanna Packagining Machinery Pvt. Ltd., Technocraft Engineers and Pitambari Products Pvt. Ltd. The visit was concluded by meeting with LUB dignitaries. Through the visit the department has identified areas where MED students can work on finding solution to some of the technical problems faced by LUB members.

15.5 Expert Lectures Arranged Under TEQIP

Department of Mechanical Engineering conducted 15 expert lectures with support from industry professionals and academic experts during year 2015-16.

The college has actively utilized the funds provided by TEQIP II for the benefit of the students by organizing expert lectures.

The expert lectures give students an overview of the current trends and practices prevalent in the industry.

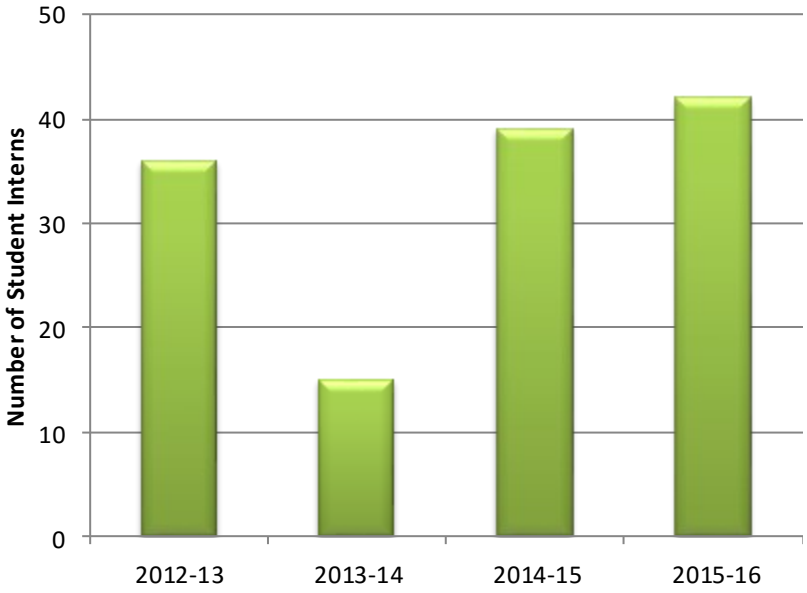


Expert lecture by Mr. Shrey Mahajan To UG/PG student organized by Prof. R. Easow.

Expert lecture by Amol Sakhalkar To T.Y.B.Tech organized by Prof. S. Vankar.

Expert Lec. Date	Session Topic	Name of Expert
10 September 2015	Mechatronics	Mr. Amol Sakhalkar, Digel System
14 September 2015	Gyroscope	Mr. Ujjwal Rane, Bentley Systems
15 September 2015	Balancing of Machines	Mr. Ujjwal Rane, Bentley Systems
17 September 2015	Mechatronics	Mr. Mahesh Shinde, Tata Motors
16 September 2015	Lasers for Precision Industrial Micro-machining	Dr. Rajesh S. Patel, Spectra Physics
20 October 2015	Design of Heat Exchanger	Dr. Praful Phadke, Automobile Specialist
21 October 2015	Burner Design	Dr. Praful Phadke, Automobile Specialist
29 October 2015	Design of component with composite material	Mr. Shantanu Prabhune, Larsen & Toubro
30 October 2015	Role of Design Engineer in Heavy Engg. Industry	Mr. Girish Savant, Larsen & Toubro
22 February 2016	Technical Paper Writing	Dr. Rakesh Mote, IIT Bombay
08 March 2016	VRF Systems	Mr. Shrey Mahajan, Fujitsu
12 April 2016	Fracture Mechanics: Concepts and Applications in Pressure Vessel	Mr. Suyog Shinde, Larsen & Toubro
25 April 2016	Introducing to sheet metal stamping and forming processes	Prof. K. S. Arvindkumar, Fr. Conceicao Rodrigues College of Engineering
26 April 2016	Valve Selection for Piping Engineers	Mr. Pankaj Israni, Aker Solutions
28 April 2016	Vibration Application	Mr. Shriprasad Durugkar, Larsen & Toubro

15.6 Internship Training



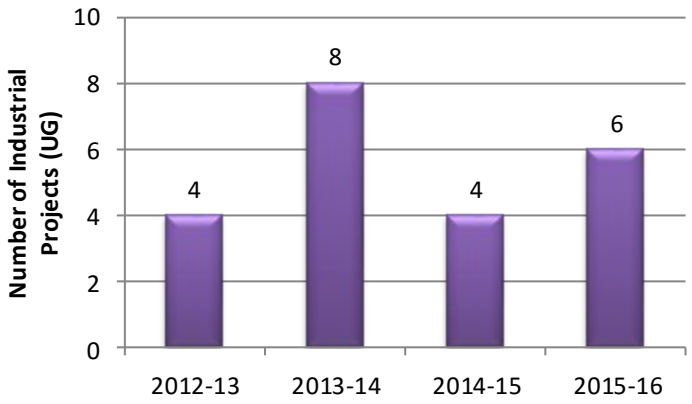
42 students underwent internship training in the year 2015-16 in different industries.

These trainings benefit the students by making them aware of the trends/ activities carried out in an industry and will make them more employable.

The students with internship background contribute more effectively in classroom teaching with their views, knowledge and experiences gained from their industry tenure.

Name of Company	No. of Interns
Larsen & Toubro , Ahmednagar	1
Larsen & Toubro , Powai	3
ABC Vehicle PVT. LTD., Pune	1
Bosch LTD., Nashik	2
Tata Motors, Pune	1
Reliance Industries Limited, Patalganga	1
Centre Workshop MSRTC, Aurangabad	9
Kirloskar Oil Engine LTD., Kolhapur	1
Parel Local Workshop, Parel	1
NTPC, Nagpur	1
Suzlon Global Service LTD., Nandurbar	1
Mumbai Rail Vikas Corporation, Churchgate	9
Hindustan Aeronautical Ltd., Nashik	1
Salasar Force Services Centre, Ahmednagar	1
Aker Powergas Pvt. Ltd., Kanjurmarg	2
Monosanto India Ltd., Silvasa	1
Ghatge Patil Industries, Kolhapur	1
GKW Consult, J&K	1
Ballarpur Graphic & Paper Production Ltd., Ballarshah	1
Forbes India Ltd., Powai	1
Mumbai	2

15.7 Industrial Projects (Undergraduate)



The industrial projects benefit the students by making them aware of the technologies adopted and activities carried out in industry. Such projects can also improve their job prospects.

The industry collaborate projects improve the contact between industry and department thus benefiting in other academic activities such as curriculum development, etc.

List of industrial projects is as follows.

No.	Name of industrial projects	Name of the students	Company	Name of Guide
1	Digital Manufacturing Using DELMIA V6	Dhumal Amey Ashok Nagrik Monit VIvek Khillari Prem Rajendra Pandhare Mahesh Madhukar	Anand Tool & Equipment, Mumbai	Dr. R.B. Buktar
2	Design and Development of Automation Welding Fixture for Double Bend Tapered Led	Anasane Gaurav Arun Kanase Bhupal Jayant Shahare Nikhil Vijay Thul Ashwin Chandrakant	S. R. Formitech, Mumabi	Dr. R.B. Buktar
3	System Improvisation of Storage and Preservation Facilities	Jain Aman Dilkhush Kawade Sneha Sunil Raut Aniket Chintaman	Reliance Power Plant, Dahanu	Dr. K. S. Bhole
4	Implementation of Lean Manufacturing Technique for Manufacturing Actuators	Shah Neha Ajay Ghag Prachiti Ramkrishna Patil Brijaraj Kishorsingh	Rotex Manufacturers and Engineers Private Limited,Mumbai	Dr. K. S. Bhole
5	Improvement in OEE of Web Offset Printing Process	Narvekar Ekta Shekhar Panchal Akshay Vijaykumar Gune shubham Sunil	Repro India Pvt. Ltd., Navi Mumbai	Dr. S. B. Rane
6	Lean Six Sigma Implementation in Windshield Washer Unit and P20 Wiper Motor Production	Mewada Mittal Sunil Alabnur Vinayak Yamanappa Sayyad Akil Ahamad M.	Prabha Industries, Mumbai	Dr. S. B. Rane

15.8 Innovation Networking Projects in Collaboration with ICT, Mumbai

- SPCE signed MOU for participation in Innovation Networking Projects on 1st April 2014.
- A virtual Innovation Networking of TEQIP institutes in Maharashtra to innovate new products/processes/systems under initiative by ICT, Mumbai. Total 19 projects were conceived.
- In each project, UG and PG engineering students from multiple institutes are involved to design, manufacture and test an innovative product. Total 55 Undergraduate students from SPCE (Mechanical and Electrical Engineering Department) initially participated in 6 projects.
- One of the project “Laboratory Scale Self Sustaining Waste Plastic Pyrolysis System” was extended to convert into a full B.Tech. student project. The current year student team established the full setup till its experimental validation stage. Industry has shown interest in transfer of the product technology for commercial use.

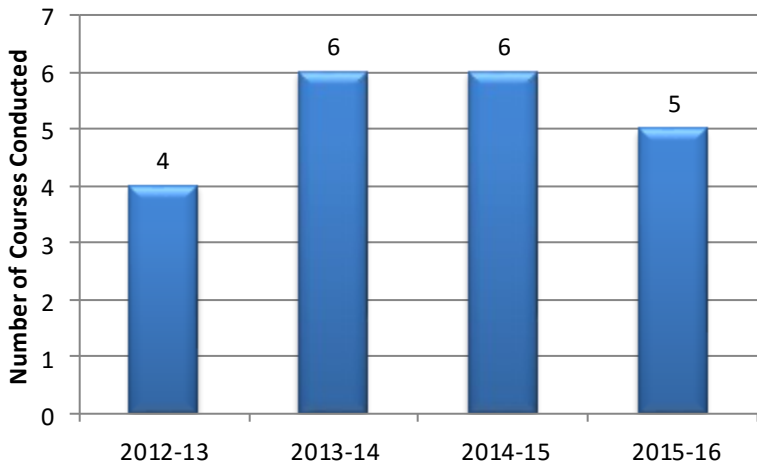
15.9 Sponsored Laboratory Equipment under MOU

Emerson Climate Technologies, Pune, donated their product, Scroll Compressor, for student study in Refrigeration and Air Conditioning Laboratory. Department is thankful to Prof. R. Easow (ex-faculty) and Mr. S. S. Kale (Alumnus) who helped to forge relationship with Emerson. The unit can be fully dismantled by the students such that they can study the internal details and functions of the scroll compressor and understand the working of the same.

Prof. R. Easow (ex-faculty) played an pivotal role in forging relationship with Emerson Climate Technologies, Pune.

16. Faculty and Staff Interaction with Outside World

16.1 Courses Conducted with Industries/Institutes Under TEQIP



The courses in association with industry help to improve industry-institute interaction. These courses can be a source of revenue generation for various departmental activities. Participants of these courses will develop skills to take on the challenges faced by the industry. The courses conducted vary from conventional topics such as process equipment design to more recent subjects such as MEMS or IOT.

SR.	TITLE OF THE COURSE	ASSOCIATION WITH	DATE	CO-ORDINATOR/S
1	MEMS	Suman Masuwala Advance Micro-Engineering Laboratory IIT, Bombay	4-8 Jan 2016	Dr. Kiran Bhole
2	One Day Workshop on Internet of Things (IOT)	KRATOS & IT Solution	6-May 2016	Dr. R. B. Buktar
3	Digital manufacturing Using DELMIA	Tata Technology	23-28 May 2016	Dr. R. B. Buktar
4	Pressure Equipment Design and Piping Engineering	Aker Solutions	30 May-10 Jun 2016	Dr. N.R. Raykar and Prof. D. N. Jadhav
5	Mechatronics-Concept to Commissioning	Christiani Sharpline Pvt. Ltd. Navi Mumbai	13-21 Jun 2016	Dr. Kiran Bhole

One day course on “INTERNET OF THINGS (IOT)” conducted in collaboration with KRATOS ENGINEERING & IT Solution, Pune, under TEQIP-II (May 2016).

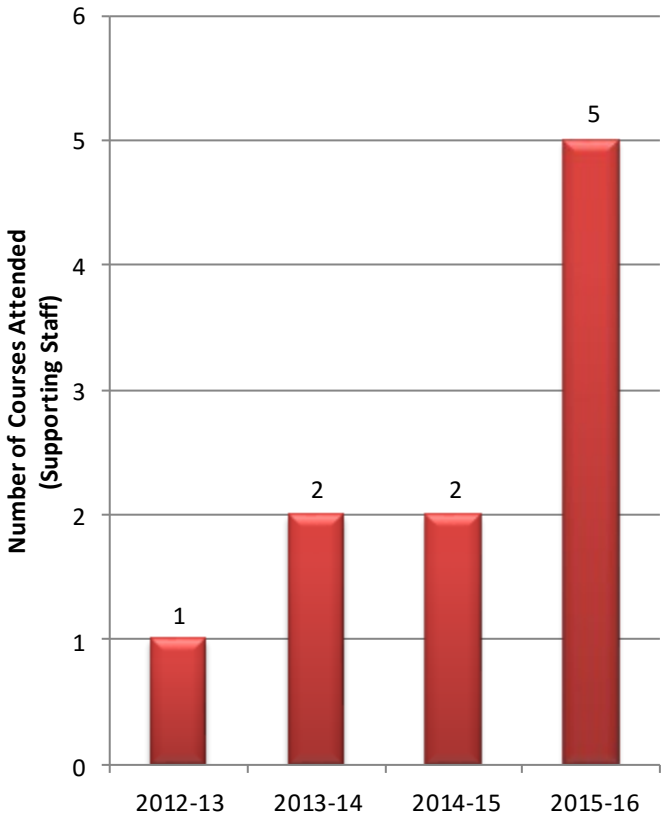
Two-week training course on “Pressure Equipment Design and Piping Engineering” conducted in collaboration with Aker Solutions, Mumbai, under TEQIP-II (May-June 2016).

Nine days course on “Mechatronics-Concept to Commissioning” conducted in collaboration with Christiani Sharpline Pvt. Ltd. Navi Mumbai, under TEQIP-II (June 2016).

Five day training course on “MEMS” conducted in collaboration with Suman Mashruwala Advance Micro-Engineering Laboratory, IIT Bombay, Mumbai, under TEQIP-II (Jan 2016).

Six days course on “Digital manufacturing Using DELMIA” conducted in collaboration with Tata Technology, Mumbai, under TEQIP-II (May 2016).

16.2 Courses Conducted for Supporting Staff Under TEQIP



Sr. No.	Title of Course	Date	Participant
1	Communication For Better Understanding	20-21 Aug'16	Mr. Luis Dias, Mr. S.M. Shetkar, Mr. Rajesh B Keny, Mr. Nilesh Kelkar, Mr. Kumar Shinde, Mr. Arif Kazi, Mr. P.V. Raje, Mr. D.L. Parab, Mr. M. L. Khamkar, Mr. M.T. Bhangare,
2	Developing Basic Competencies in Laboratory and Office Management	15-19 Dec'16	Mr. Luis Dias, Mr. Pravin Lohar, Mr. Nilesh Kelkar.
3	Safety Measures In Laboratories	25-29 Feb'16	Mr. Pravin Lohar, Mr. Nilesh Kelkar, Mr. Kumar Shinde.
4	CNC Programming & Operation	21-25 May'16	Mr. Nilesh Kelkar
5	Enhancing Leadership Attitude And Ethics	24-26 May'16	Mr. Pravin Lohar, Mr. Luis Dias, Mr. S.M. Shetkar.

"Enhancing Leadership Attitude And Ethics" course conducted for supporting staff during May 2016

16.3 Industrial Trainings Conducted for Students Under TEQIP

Department of Mechanical Engineering conducted a 10-Day training program for S.Y.B.Tech & T.Y.B.Tech students in association with RELIANCE THERMAL POWER STATION AT DAHANU. Around 31 student benefitted from this training. Training was aimed to impart theoretical as well as practical knowledge to student.

During the ten-day training program, student visited to various units of plant such as Condenser system, Lubricating oil system, Ash handling system, Cooling water plant, compressor room, Desulphurization of flue gas system etc. The student were explained with the working principle of various equipment. Feedback from students indicate positive learning experience.

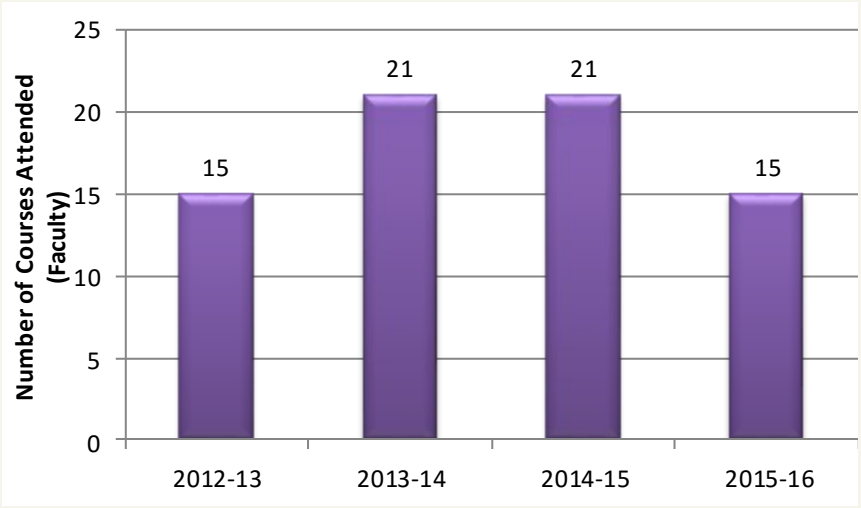
The positive reception from the DTPS staff and faculty was highly appreciated by the students, who left the plant with an insightful knowledge about the working of a thermal power station with practical demonstration of all the equipment used.

The various training programmes conducted for students provided them with knowledge outside the regular curriculum. It also presented them an opportunity to interact with other students and experienced engineers with varied background. These forums helped the students to reinforce their theoretical knowledge with hands on experience using some of the modern experimental, simulation and manufacturing tools.

The training programmes are also found to be beneficial in attaining following programme outcomes

- Responsiveness towards professionalism and ethics.
- An ability to function on multi-disciplinary teams
- An ability to engage in lifelong learning.

16.4 Courses and Conferences Attended by Faculty under TEQIP



During year 2015-16, faculty attended 15 training courses and conferences under TEQIP, arranged by various institutes. Some of the organizations visited by our faculty include: S.V. National Institute of Technology, IIT Delhi, IIT Bombay, BMS COE, Dr. D.Y. Patil Insitute of Engineering and Technology, Pimpri Pune, IIM Tiruchipally, Engineering Staff College of India, Hyderabad, YASHDA, Pune. The events provide an opportunity to the faculty to interact with teachers from other institutes and be aware of various research projects/activities undertaken in other colleges/organizations.

16.5 Corporate Training

A 3 day corporate training on "Finite Element Analysis of Pressure Equipment" was conducted by Dr. N. R. Raykar for ThyssenKrupp Industrial Solutions, Mumbai, at their office from 9th to 11th July 2016. The training was attended by about 25 engineers with experience ranging from 2 to 10 years.

Corporate Training for ThyssenKrupp Ind. Solutions, Mumbai (July 2015)

16.6 Consultancy Service

Dr. N. R. Raykar provided engineering consultancy serivice to New Horizons Engineering Services (NHES), Mumbai, to perform finite element analysis of pressure vessel components as per Part 5 of ASME Section VIII Division 2, during November 2015-January 2016. The consultancy fee amount was Rs. 42,000/-.

16.7 Interaction with Stakeholders

The department regularly interacts with its stakeholders in addition to students, that is, industry, alumni and parents, to take their feedback for planning improvements in functioning of the department. The interaction with industry has been detailed elsewhere in the report.

Alumni Meet

Mechanical Engineering Department of Bharatiya Vidya Bhavan's Sardar Patel College of Engineering (SPCE) organized Alumni meet on 13th February 2016 under Technical Education Quality Improvement Program (TEQIP). The event was attended by 36 alumni. The main purpose of this meet was to promote the interaction between alumni and teacher for bene-fits of students growth, development and to discuss best practices. Further this meet also promote to expose alumni to different facility, schemes available for the students and various platforms available as stake holder of the system.

Parent Meet

The department organized Alumni meet on 2nd February 2016 under TEQIP. The event was attended by 25 parents. Parents of students of UG and PG program were invited for the discussion. The main purpose of this meet was to promote the interaction between parent and teacher for benefits of students growth, development and to discuss best practices. Further this meet also promote to ex-pose parents to different facility, schemes available for the students and various platforms available as stake holder of the system.

17. Faculty Achievements

Dr. Sudhakar Umale received the Best technical Paper Award in Indian Foundry Journal (Ferrous Category) for his article titled *"Austempering Heat Treatment of Low Carbon Equivalent Ductile Irons"*

18. Departmental Celebrations

Department celebrated *Dassera Puja* at each departmental facility and sought blessings from the Almighty.

Birthday celebration for Prof. D. N. Jadhav.

19. Student Performance and Activities

19.1 Class Representatives

B.TECH
(AAKASH SALI)

T.Y.B.TECH
(ATUL TIWARI)

S.Y.B.TECH
(SONI VED DEEPAK)

F.Y.B.TECH
(PAWAN PATEL)

19.2 Meritorious Students

Merit rank	Registration No.	Name of the student	
FIRST YEAR B.TECH.			
1	M1510066	MUGERAYA BHAVIK SUDHARSHAN	
2	M1510037	CHANDNANI RAOUL ASHOK	
3	M1510044	SAVLA RAJ SHANTILAL	
SECOND YEAR B.TECH.			
1	M1520005	AHER ANIL ARJUN (DSA)	

Merit rank	Registration No.	Name of the student	
SECOND YEAR B.TECH. (CONTD.)			
2	M1520007	BERDE SHRADDHA SUNIL (DSA)	
3	M1410001	SONI VED DEEPAK	
THIRD YEAR B.TECH.			
1	M1310062	TIWARI ATULKUMAR CHANDRAMOHAN	
2	M1310050	HASAN ASIF MANZOOR	
3	M1310066	THAKRE SHREYASH SURESH	
FINAL YEAR B.TECH.			
1	M1210F47	DHUMAL AMEY ASHOK	

Merit rank	Registration No.	Name of the student	
FINAL YEAR B.TECH. (CONTD.)			
2	M1210F03	YELIGETI MADHURA VENKATESH	
3	M1210F49	SALI AKASH RAJENDRA	

19.3 Student Achievements and Awards

Mr. Yahya Narvhel, PhD scholar, receiving the award for **First position** in the project poster competition (PhD category) at DJSCOE., Mumbai

Mr. Jayesh Karve , M.Tech. (M/c Design), receiving the award for securing the **Second position** in the project poster competition (MTech category) at DJSCOE, Mumbai.

Mr. Sahil Attar, M.Tech. (M/c Design), received a **Bronze medal** under '-69 kg weight' category at State Level Kick-Boxing Championship, at Institute of Chemical Technology, Matunga, organized on 13th March 2016.

19.4 Student Pursuing Post-graduate Studies

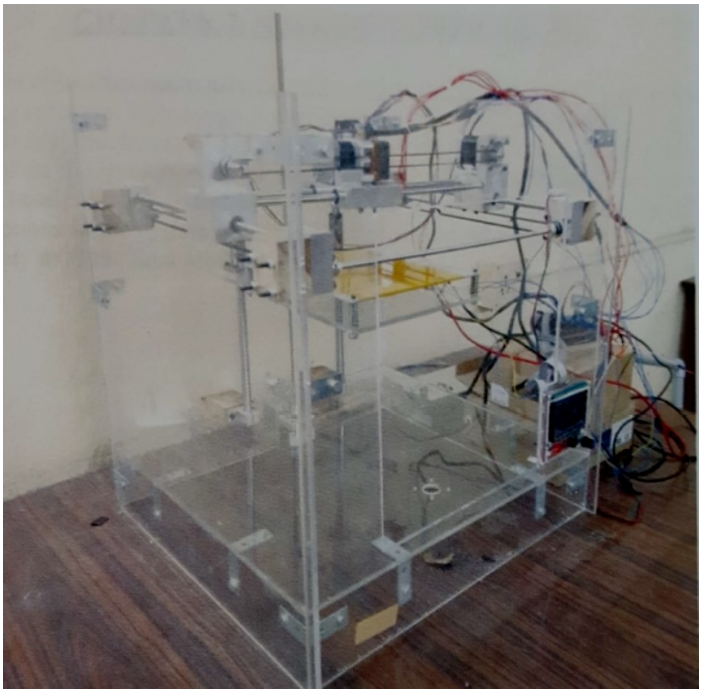
Post-Graduation in India

1		**Vipul Ahuja** M.Tech. in Thermal Engineering IIT Bombay, Mumbai

Post-Graduation Abroad

1		**Madhura Yeligeti** M.Sc. in Computational Mechanics of Materials and Structures University of Stuttgart, Germany	2		**Aditya Katkar** M.S. in Mechanical Engineering University of Florida, USA
3		**Vrishtee Rane** Masters in Industrial Engg. Iowa State University, USA	4		**Neha Shah** Masters in Industrial Engg. Texas A&M University, USA

19.5 Senior Student Projects (UG and PG)



Design And Fabrication of 3D Printer Based On Fused Deposition Modeling (B.Tech.)

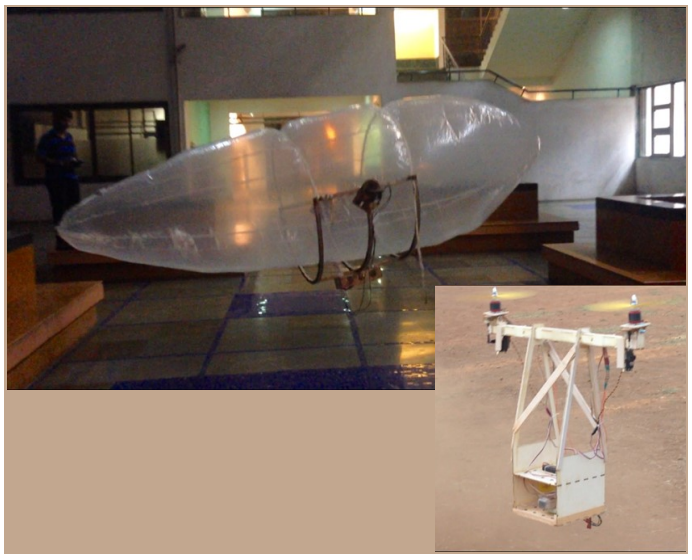
Student team: Mr. Akash Sali, Mr. Kushal Patel, Mr. Pradeepkumar Patel, Ms. Vrishtee Rane
Project Supervisor: Prof. Sachin Vankar

Design And Fabrication of Flexural based liner Guideway for Micro Drilling Work Station (B.Tech.)
Student team: Mr. Aditya Katkar, Mr. Srideep Nair Mr. Akshay Padwal
Project Supervisor: Prof. Megha Janbandhu

Laboratory Scale Self-Sustaining Waste Plastic Pyrolysis System (INN Project, B.Tech.)

Student team: Mr. Mandar Santan, Mr. Vinayak Langote, Mr. Shridhar Kulkarni (all 3 from B.Tech. 2015), Mr. Vipul Ahuja, Mr. Prakash Jagtap, Mr. Akshay Dorage (all 3 from B.Tech. 2016)

Project Supervisor: Prof. D. N. Jadhav



Experimental Testing Setup to Characterize Industrial Instrumentation Valves (M.Tech. M/c Design)

Student team: Mr. Romil Khowal, Mr. Akshay Ravande

Project Supervisor: Prof. D. N. Jadhav

Design and Fabrication of an autonomous Airship (M.Tech. M/c Design)

Student team: Mr. Sohrab Mistry

Project Supervisor: Prof. Nilesh Raykar

19.6 Student Activities

SAEINDIA SUPRA 2016 Competition

- In SUPRA 2016 completion SPCE Racing team **won the 'Go-Green' award for the Most Fuel Efficient Car** and **7th place over-all** in India out of 173 participating teams.
- SUPRA 2016 was held at the Buddh International Circuit, Greater Noida.
- The car was named 'Klein 2.0'. The main design feature being use of light-weight composite materials and optimized part assemblies which ultimately resulted in a better fuel economy.
- The Team was lead by **Mr. Aman Chheda**.
- The Faculty coordinator was **Dr. S. S. Umale** of the MED.

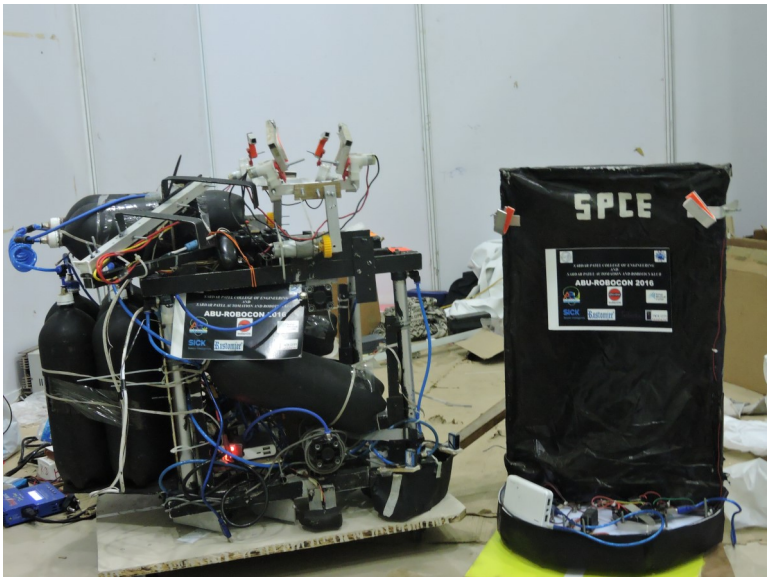
International Go-Kart Championship-2016

- SPCE-MED students' team participated in International Go-Kart competition in March 2016 at Jalandhar, Punjab.
- Team SPCE stood 10th Position amongst top 25 teams.
- The Team was lead by **Mr. Ved Soni**.
- The Faculty coordinator was **Dr. Kiran Bhole** of the MED.

SAEINDIA BAJA 2016 Competition

- BAJA 2016 was held at the Indore from 16-21 February 2016 .
- More than 200 engineering colleges participated in the event. This was a national level competition for engineering students with an objective to engineer and manufacture a single seat All-Terrain Vehicle (ATV)
- The team completed all events successfully and qualified for final endurance run.
- The Team was lead by **Mr. Falgun Patel**.
- The Faculty coordinator was **Dr. N. R. Raykar**

ROBOCON Competition



- ABU ROBOCON 2016 was held in MIT, Alandi, in Pune. The theme for the competition was 'Chai yo' . It was based on the effective use of renewable energy. The task was to be completed with the use of two robots. One was to drive the other using only renewable sources of energy. Team achieved position in the top 16 teams out of total 100 teams.
- The Team consisted of students from both Mechanical and Electrical Engineering Departments of SPCE.
- The Faculty coordinator for SUPRA 2016 was **Prof. D. N. Jadhav** of the MED.

ISHRAE

Student Installation Ceremony—ISHRAE

The SPCE student chapter of Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE) has been keenly involved in various activities as follows.

- Two members Parth Narkar and Mahak Patel were AQUEST Semifinalist in ACREX 2016.
- Sumit Pawar won the first Prize in T-Shirt Design Competition organized in JAMBOREE'16.
- Monika Bhati got third prize in a competition called as "Why should I Hire You?"
- Three teams from SPCE has participated in National Students Design Competition (NSDC).

19.7 B.Tech. (Mechanical) Batch of 2016

19.8 Mechanical Engineering Students' Association (MESA) Activities

MESA Committee 2015-16

Prof. Megha Janbandhu, MESA In-charge

Trek to Rajmachi, August 2015

STRESS MANAGEMENT WORK-SHOP

A Stress Management workshop was organized by MESA for students of First Year Mechanical Engineering on 15th September, 2015. **Dr. Ambrish Bhatt** was invited to conduct this seminar.

Dr. Ambrish Bhatt giving seminar on Stress Management to F.Y.B.Tech students

The topics covered under this seminar were as follows: i) Getting used to the college atmosphere, (ii) Overcoming negativity, (iii) Managing strong emotions, (iv) Time management, (v) Increasing self-control, (vi) Anger management, (vii) Importance of correct attitude in life.

Teachers' Day Celebration, 4th September 2015

Visit to Parle Industries for F.Y.B.Tech. students, October 2015

10 Day Industrial Tour to Rajasthan,

Visit to BARC by F.Y.B.Tech. students, National Science Day Celebration, February 2016

Two Day Workshop on Computational Fluid Dynamics (CFD)

Department conducted a two day workshop on COMPUTATIONAL FLUID DYNAMICS was organized by MESA-SPCE on 10th–11th October, 2015. This workshop was organized in association with Codex Design, India and

Techkriti'16, Technical festival of IIT-Kanpur. The workshop was inaugurated by the chief guest of honour, **Shri Chandrashekar Meshram**, Deputy General Manager, ONGC-Mumbai.

Sports Event by MESA: Football Winners, S.Y. B.Tech.(Mech)

Sports Event by MESA: Volleyball finals, T.Y. B.Tech. vs Final Year B.Tech. (Mech)

Sports Event by MESA: Cricket Winners—M.Tech. (Mech)-2

Blood Donation Camp by MESA, 22 Jan 2016

20. Alumni Corner

Mr. Ramesh Vohra (SPCE– MED alumnus –1966) who is from the **1st batch of graduates** from SPCE-MED made a courtesy visit to the department in February 2016. He was appraised about overall progress of the institute over years. He expressed satisfaction and offered his full support for further developments.

Bentley Systems, Inc. bestowed annual Productibility Award to **Mr. Ujjwal Rane** (SPCE Mechanical Alumnus 1984) in recognition of consistent display of ***innovation, creativity, and dedication in creating and delivering value*** through Bentley products to the customers.

Dr. Rajesh S. Patel (SPCE Mechanical Alumnus 1984), Director of Strategic Marketing and Applications at Spectra-Physics, USA, visited MED in September 2015. He delivered an expert lecture on "Lasers for Precision Industrial Micromachining" to M. Tech. and S.Y. B. Tech. students. He also encouraged students to think differently and leverage technology for developing new products.

Mr. Ujjwal Rane and Dr. Rajesh Patel during visit to their Alma Mater.

21. Postgraduate Programmes

21.1 PG Coordinators

Dr. R. S. Maurya

M.Tech. Thermal Engineering Coordinator

Prof. D. N. Jadhav

M.Tech. Machine Design Coordinator

21.2 PG Programmes

Department has a sanctioned intake of 18 students each for M.Tech. in two specialization programmes:

(i) Thermal Engineering and (ii) Machine Design.

21.3 Proposed New PG Programme (CIM)

Department of Mechanical Engineering is starting a new PG programme titled "Computer Integrated Manufacturing (CIM)" in the next academic year 2016-17

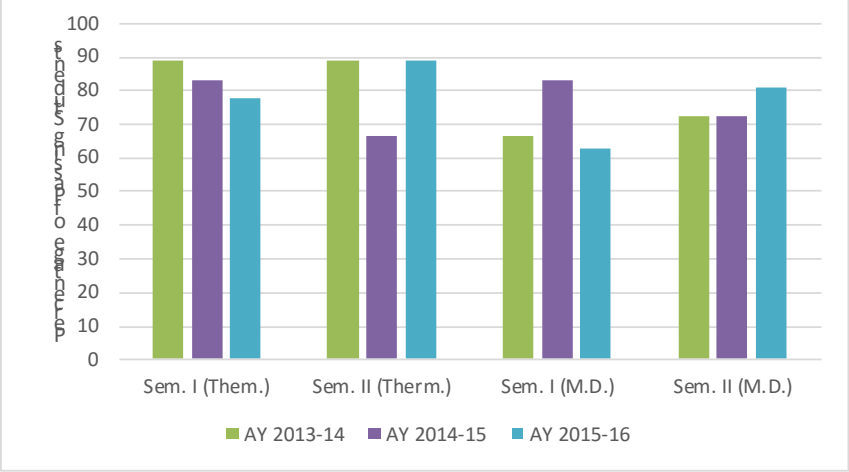
Following software are already available which will strengthen the curriculum of this course.

•DELCAM •PLM •CATIA •DELMIA •SIMULIA (ABAQUS)

21.4 Senior Research Advisor

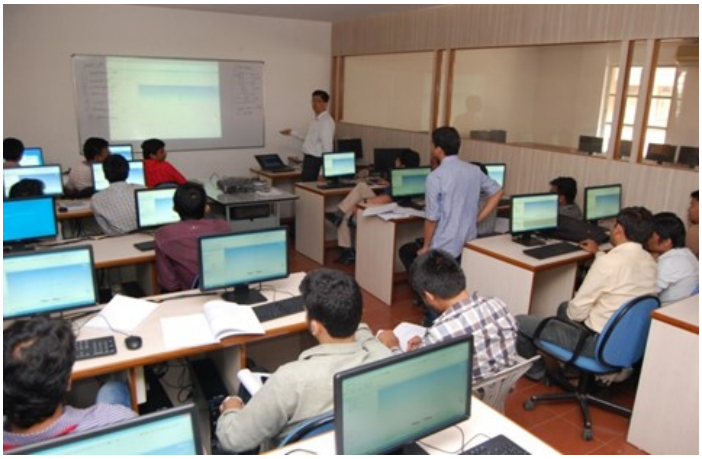
Dr. S. K. Maiti, Professor and Ex-Head, Mechanical Engineering, IITB, has been appointed as the Senior Research Advisor for the department of Mechanical Engineering. Prof. Maiti has been facilitating development of a research culture in the department and making the students and faculty aware about the research opportunities available at national and international levels.

21.5 Trends and Statistics—Result Analysis (PG)



Percentages of passing postgraduate students in each semester of the courses are as shown in the chart for current and past two academic years.

21.6 Research Laboratory

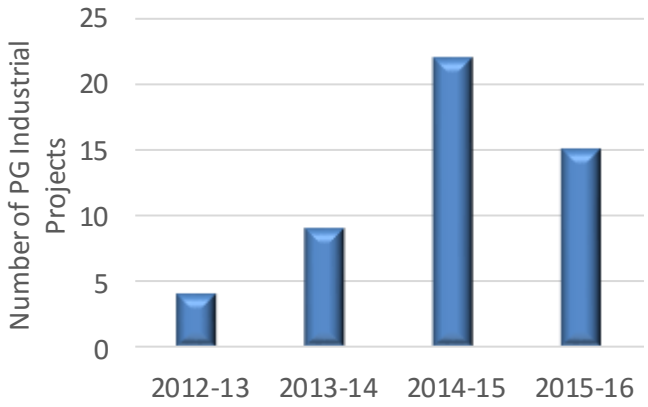


- Research Laboratory is available for M.E. Machine Design course. In this Lab students can carry out their computational research work.
- This laboratory will provide research opportunities to the postgraduate students.
- The laboratory will also promote in developing the research culture in the department.

21.7 PG Orientation Programme

The incoming batch of M.Tech. students were given orientation to make them aware about the Mechanical Engineering Department. Research facilities such as library and software tools were introduced to the new students. The research funding option available under TEQIP programme such as research seed money was presented to them. The students were briefed about post-graduate assistance ships offered to PG students.

21.8 Industrial Projects (Post-graduate)



Industrial projects for post-graduate students provide an important opportunity to in-depth study the problems faced by industry and to develop innovative solutions to them. The Department actively interacts with industry to identify projects suitable for PG students. The project allocation is usually done after screening process conducted by HR department of concerned industry organization.

List of industrial projects is as follows.

SR. NO.	TITLE OF PROJECT	STUDENT'S NAME	INDUSTRY	GUIDE
1	Operating & Geometrical Characterization of Downdraft Gasifiers using Numerical Analysis	Kane Aniruddha Ajay (M.tech Thermal)	TATA Power	Dr. R. S. Maurya
2	Artificial Neural Networks And its Application	Demapure Rohan Bhaarat (M.tech Design)	Mahindra	Dr. R. B. Buktar
3	Experimental stress Analysis Using Brittle Coating Technique	Gangan Ajinkya Anant (M.tech Design)	BARC	Dr. N. R. Raykar

SR. NO.	TITLE OF PROJECT	STUDENT'S NAME	INDUSTRY	GUIDE
4	Genetic Algorithm for optimization And Reliability Assessment	Kade Sandeep Ramesh (M.tech Design)	BARC	Prof. D. N. Jadhav
5	Experimental stress Analysis Using Moire Method	Dhobale Pamkaj Laxman (M.tech Design)	Godrej	Dr. S. B. Rane
6	Sequential Optimization And Reliability Assessment Method	Khowal Romil Pawan (M.tech Design)	Fluid Control Pune	Prof. D. N. Jadhav
7	Evaluation of Performance characteristics of Single Ferrule Bite Fitting by FEA	Kunsneniwar Aksha Pramod (M.tech Design)	Fluid Control Pune	Dr. S. B. Rane
8	Experimental stress Analysis Using Strain Gauge.	Mali Jaswin Bhanudas (M.tech Design)	Fluid Control Pune	Dr. S. B. Rane
9	Experimental stress Analysis Using Photo elasticity.	Payghan Vishal Janardan (M.tech Design)	L&T Powai	Prof. D. N. Jadhav
1o	Reliability Centered Maintenance	Karve Jayesh Suresh (M.tech Design)	Fluid Control Pune	Dr. S. B. Rane
11	Experimental stress Analysis Using Holography Interferometry.	Ravande Akshay Bharat (M.tech Design)	Fluid Control Pune	Prof. D. N. Jadhav
12	Estimation of Impact Energy of Polymer Composite	Rawool Pankaj Eknath (M.tech Design)	L&T Powai	Dr. N. R. Raykar
13	Risk Information In-Service Inspection in Nuclear Power Plant	Khairmode Atul Uttam (M.tech Design)	BARC	Dr. R. B. Buktar
14	Comparison Between Rapid Prototyping And Virtual Probability	Khartade Bhushan Pandurang (M.tech Design)	Fluid Control Pune	Dr. R. B. Buktar
15	Feature Recognition In CAD	Phadtare Kiran Bapurao (M.tech Design)	IEC Bombay	Dr. R. B. Buktar

21.9 Meritorious Students—PG (Based on Coursework)

Merit rank	Name of the student	
M.TECH. (THERMAL ENGINEERING)		
1	MELWANKI RISHABH MANOJ	
2	BIRAJDAR SAMEER AHMED	
3	MAHAJAN GAURAV PREMCHAND	

Merit rank	Name of the student	
M.TECH. (MACHINE DESIGN)		
1	SIDDIQUI AMIR HAMZA NAZIR AHMED	
2	GIRKAR RAHUL SATAPA	
3	SAHANE DHIRAJ NIVRUTTI	

22. Doctoral Program

22.1 PhD Program Coordinator

Dr. S. B. Rane
PhD Program Coordinator

The PhD program of Department envisions to establish as a Distinguished Centre of Excellence for research in Mechanical Engineering and allied fields; to contribute significantly in service to the nation and mankind. Department has a sanctioned intake of 60 for the PhD Research Scholars.

Department has also applied for QIP Centre to AICTE.

22.2 List of PhD Guides

Sr. No.	Name PhD Guide	Areas of Research
1	Dr. S. S. Mantha	CAM, Robotics, SCM, Automation
2	Dr. S. K. Mahajan	Industrial Engineering and Management , BPR, TQM
3	Dr. G. T. Thampi	CAD/CAM, Robotics, ERP, CRM,SCM,PLM
4	Dr. A.V. Bhonsale	IEM, SCM, Energy Management
5	Dr. R. B. Buktar	Industrial Engineering
6	Dr. V. R. Kalamkar	CFD, Machine Design
7	Dr. R. S. Maurya	CFD, Thermal Engineering, Thermo-fluid, Energy systems
8	Dr. S. B. Rane	Project Management, Manufacturing Planning and Control, IEM, SCM
9	Dr. S. M. Khot	Machine Design
10	Dr. Vivek Sunnapwar	Industrial Engineering and Management , BPR, TQM
11	Dr. Sunil S. Bhamare	TQM, Quality Engineering, Quality Management
12	Dr. Sudhakar S. Umale	I.C.Engine, Heat Transfer, Engine Emission, Material Science

22.3 PhD Status Summary

- PhD Intake = 60
- Number of Filled seats= 20
- Number of Admission in 2015-2016 = 5
- Number of PhD Thesis submitted = 1
- Number of PhD Completed =16

22.4 PhD Research Resources

Software **SPSS (Statistical Package for the Social Sciences)** was purchased under RPS research grant for successful execution of 'Modelling product development for medical device manufacturing industries' research project.

SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses. SPSS is available from several platforms; Windows, Macintosh, and the UNIX systems. SPSS customers in virtually every industry, including telecommunications, banking, finance, insurance, healthcare, manufacturing, retail, consumer packaged goods, higher education, government, and market research.

Participants during 3 day training programme on SPSS. From left to right seated Mr. Subramanya-Trainer from IBM SPSS, Mr.P.D. Deshmukh - PhD Scholar, Coordinator-Dr. S.B.Rane, and participants [standing]

A three day training programme was conducted on SPSS from 22-24 June 2015 at MED, SPCE. The training was conducted by Mr. Subramanya K. Total 13 participants including UG/PG/PhD students and faculty members attended the training. Major objectives of programme were as follows.

- Demonstrate SPSS as a data analysis tool and to analyse and reorganize information using SPSS.
- To integrate information and build models using SPSS.
- To carry out inferential statistical analysis using SPSS.

22.5 QIP Center

The QIP center is under process of approval from AICTE.

The main objective of the programme is to upgrade the expertise and capabilities of the faculty members of the degree-level engineering institutions, National Institutes of Technology (NITs) and the National Institutes of Technical Teachers Training and Research (NITTTR) in the country. The programme launched by the Government of India in the year 1970, is now being implemented and monitored by the National QIP Coordination Committee, funded through the AICTE. Admissions to Ph.D. programmes are also offered in selected areas in institutions recognized as Minor QIP centers. A large number of faculty members from engineering institutions from all over the country have pursued Master and Ph.D degree programmes under this scheme. There are three main activities under QIP centre carried out for the faculty of degree-level engineering institution:

(i) Providing opportunities to faculty members of the degree-level engineering institutions to improve their qualifications by offering admissions to Ph.D degree programmes.
(ii) Organizing Short Term Courses at the QIP Centres for serving teachers.
(iii) Curriculum Development Cell activities which help to improve class room teaching and learning.

* NOTE: The statistical data referred in this report represents general trend and not exact data.