Proficiency Course on Finite Element Analysis	
Duration	25 - 30 June 2016
Brief summary of the course	The course focused on the conceptual and software (ANSYS) skills on structural modeling and analysis of engineering components subjected to mechanical and thermal loads. Modeling, discretisation, boundary conditions, loading and results analysis are dealt with.
Module 1	Fundamental Concepts in the FEA, FEA steps, Types of FEA Errors, FE Mesh, Class Exercises and Lab sessions
Module 2	Convergence, Verification and Validation of FEA Results, Plane stress and Plane strain problems, Class Exercises and Lab sessions
Module 3	Types of Finite Elements, Types of Boundary Conditions, Useful Modelling Techniques, Class Exercises and Lab sessions
Module 4	Modal Analysis, Buckling Analysis, Class Exercises and Lab sessions
Module 5	Nonlinear Geometry Analysis, Nonlinear Material Analysis, Contact Stress Analysis, Class Exercises and Lab sessions
Module 6	Steady State Thermal Analysis, Transient Thermal Analysis, FEA Implementation, Class Exercises and Lab sessions
Module 7	Axisymmetric problems, Test & Quiz
Resource persons	Dr H N Narasimha Murthy, Professor & Head, Mechanical Engg Dr. M Krishna, Professor, Mechanical Engineering, R V College of Engineering, Bangalore Dr. Bharathish A, Assistant Professor Kiran Kumar, Instructor, Mechanical Engineering.
Partnering industry	Mr. PurnachandraRao, Lead FEM Engineer, SKF, Bengaluru e-mail: purnachandra.rao@skf.com mobile : 9379498070
Maximum number of participants	25
Course fee	Rs 6000/-

Proficiency Course on Industrial Experimentation	
Duration	1 – 15 July 2016
Brief summary of the course	The course is focused on scientific and efficient design of experiments and analysis of results based on Taguchi and Western Methods of Experimental Design
Module 1	TheTaguchi Approach to Quality, Two-Level Experiments Full Factorial Design - Class Exercises and Lab sessions
Module 2	Two-level Experiments: Fractional Factorial Designs, Three and Four - Level Experiments, Class Exercises and Lab sessions
Module 3	Orthogonal Array Experimental Designs, OA Experimental Designs for Factors at Three and Four levels, Class Exercises and Lab sessions
Module 4	Analysis of Variance, Regression Analysis, Response Surface Methodology, Class Exercises and Lab sessions
Module 5	Multiobjective optimisation models , Class Exercises and Lab sessions
Resource persons	Dr H N Narasimha Murthy, Professor & Head, Mechanical Engineering Dr. N S Narahari, Prof. & Head, Industrial Engineering & Management Dr. C K Nagendra Guptha, Associate Professor, Industrial Engineering & Management Dr. Bharathish, Dr. S Nagesh, Prof. B W Shivaraju, Assistant Professors, Mech. Engg. Tejeswini B P, Grade I Programmer, Mechanical Engineering department
Maximum number of participants	25
Course fee	Rs 6000/-

Proficiency Course on Mechanics of Polymer Matrix Composites	
Duration	16 – 30 July 2016
Summary of the course	This course in designed for faculty, research scholars and students of mechanical, chemical and polymer engineering. The course focuses on micromechanics and macromechanics of polymer composites and failure theories. The course offers theoretical foundation and laboratory exercises on fabrication, testing and computation of properties of polymer matrix composites.
Module 1	Polymer matrix composites, Reinforcements,Micromechanics of a lamina-Hook's Law, Elastic Constants, Derivation of nine elastic constants for orthotropic material, x- Class Exercises and Laboratory Exercises on fabrication and testing of FRP laminates.
Module 2	2-D relationship of compliance and stiffness matrix, Hook's Law for two-dimensional angle lamina, ClassExercises.
Module 3	Micromechanical Analysis of a Lamina,Evaluation of the four elastic moduli, Rule of Mixture, Class Exercises.
Module 4	Failure Criteria for an elementary composite layer, Maximum stress strain criterion, Approximate Strength Criterion, Tsa-Hill Theory, Tsai-Wu theory, Class Exercises.
Module 5	Macromechanical Analysis of Laminate, Classical Lamination Theory, A, B and D Matrices,Class Exercises.
Module 6	Optimisation of laminates, composite laminates of uniform strength, Class Exercises
Module 7	Fabrication technologies of polymer composites, Laboratory Exercises on Fibre/matrix ratio, density, DSC, SEM, XRD, FTIR.
Resource person	Dr H N Narasimha Murthy, Professor & Head, Mechanical Engineering Dr. R. Sridhar & Dr. G Raj Kumar, Associate Professors, Mech Engg. Dr. Bharathish, Dr. S Nagesh, Prof. GangadharAngadi, Prof. B W Shivaraju, Assistant Professors, Mechanical Engineering Tippa Reddy, Biotechnology.
Maximum number of participants	25
Course fee	Rs 6000/-