

**Syllabus copy of courses 2017 - 2018**  
**ML202:SOFT SKILLS (SS)**  
**(Common to B.Tech V Semester CIVIL, EEE & ME)**

**Scheme : 2013**  
**Internal Assessment : 100**

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
<b>1</b>	<b>2</b>	<b>-</b>	<b>2</b>

The purpose of this course is to provide exposure to the students to the soft skills that are crucial to an employee's ability to work EFFECTIVELY.

**Course objectives:**

- Acquire competence to use grammar with an understanding of its basic rules
- Be able to speak and write appropriately applying these rules
- Communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence
- Work together in teams and accomplish objectives in a cordial atmosphere
- Face interviews, GDs and give presentations
- Understand and develop the etiquette necessary to present oneself in a professional setting

**Course outcomes:**

- Students will be able to demonstrate the competence to use grammar with an understanding of its basic rules
- Students will be able to communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence
- Students will be able to work together in teams and accomplish objectives in a cordial atmosphere
- Students will be able to face interviews, GDs and give presentations
- Students will be able to understand and develop the etiquette necessary to present themselves in a professional setting

**Course Work**

To achieve the objectives, the following course content is prescribed.

**Contents**

- Revision and reinforcement of language skills – grammar – vocabulary
- Communication Skills – Barriers to Communication – Strategies to overcome the barriers
- Non Verbal Communication – Body Language – Proxemics – Kinesics
- Emotional Quotient – self analysis of emotional responses
- Group Discussions – understanding the objective and skills tested in a GD – types of GDs – roles in a GD – dos and don'ts in a GD
- Team Work – importance of team work – team vs group – attributes of a successful team – working with groups – dealing with people – group decision making
- Goal Setting – importance of goal setting – difference between goals and dreams – importance of writing goals – SMART goals – short term goals – long term goals
- Time Management – scheduling – how to delegate effectively – plugging time leaks – learning to say “No”

- Presentation Skills – Oral Presentations – PPTs – Prepared Speeches – Extempore
- General Awareness & Current affairs
- Business Etiquette – telephone and email etiquette – dining etiquette – dos and don'ts in a formal setting

## References

1. Stephen R. Covey, “The Seven Habits of Highly Effective People”, Pocket Books Publishers, London
2. Infosys Campus Connect Portal –//<http://campusconnect.infosys.com/>
3. Shiv Khera, “You Can Win”, MacMillan India Publishers, New Delhi
4. Stephen R. Covey, A. Roger Merrill and Rebecca R. Merrill, “First Things First”, Pocket Books Publishers, London
5. Gloria J. Galanes, Katherine Adams, John K Brillhart, “Effective Group Discussion: Theory and Practice”.
6. Priyadarshani Patnaik, “Group Discussion and Interview Skills with VCD”, Foundation Books.
7. Sangeeta Sharma & Binod Mishra, “Communication Skills for Engineers and Scientists”, PHI Learning Private Limited.
8. Dr. Shalini Verma, “Body Language- Your Success Mantra”, S.Chand, 2006.
9. Andrea J. Rutherford, “Basic Communication Skills for Technology”, 2nd Edition, Pearson Education, 2007.
10. Krishna Mohan and Meera Bajerji, “Developing Communication Skills”, MacMillan India Ltd.

**ML201: QUANTITATIVE APTITUDE (QA)**  
**(Common for all branches of -III Semester)**

Scheme : 2013

Internal Assessment : 100

L	T/D	P	C
1	1	-	2

**Course objectives:**

1. To enable students in cracking Career Aptitude Tests.
2. To equip students with problem solving and decision making skills.
3. To enhance skill of analysis and reasoning.
4. To enrich students with out of box thinking and better approaches to problem solving.
5. To inculcate the logical thinking.
6. To exercise speed, accuracy and hence optimum productivity.

**Course outcomes:**

1. Cracks Career Aptitude Tests with an ease and identifies his/her innate component of a competency, hence a better career.
2. Tends to be quick learner, highly adaptive and productive.
3. Exhibits better problem solving skills with best approaches.
4. Tends to be creative in solving problems with out of box thinking.
5. Compares, differentiates and establishes relations with rational and logical thinking.
6. Displays improved mental ability and swiftness

**Numerical Ability**

Number Systems, HCF and LCM, Decimal Fractions, Square Roots and Cube Roots, Linear and Quadratic Equations

Averages, Mixtures & Allegations, Ages, Ratios, Proportions and Variations, Percentages, Profit and Loss

Time, Speed and Distance, Time and Work

Permutations and Combinations, Probability, Clocks and Calendars

**Introduction to concepts of Reasoning**

Cubes, Series and sequences, Odd man out, Coding and decoding

**General Mental Ability**

Puzzles and Teasers

**References Books:**

1. Arun Sharma, *How to Prepare for Quantitative Aptitude*, TMH Publishers, New Delhi.
2. R.S. Aggarwal, *Quantitative Aptitude*, S.Chand Publishers, New Delhi.
3. Sharon Weiner-Green, *Ira K. Wolf, Barron's GRE*, Galgotia Publications, New Delhi.
4. Ethnus, *Aptimithra*, McGraw Hill Publishers
4. R.S Aggarwal , *Verbal and Non-Verbal Reasoning*, S.Chand Publishers, New Delhi.
5. Shakuntala Devi, *Puzzles to Puzzle You*, Orient Paper Backs Publishers, New Delhi.
6. Shakuntala Devi , *More Puzzles*, Orient Paper Backs Publishers, New Delhi.
7. Ravi Narula , *Brain Teasers*, Jaico Publishing House, New Delhi.
8. George J Summers, *Puzzles and Teasers*, Jaico Publishing House, Mumbai.

# **ML -203: Business English and Technical Writing(BETW)**

**(Common to B.Tech IV Semester CE, EEE & ME Branches)**

**Scheme : 2013**  
**Internal Assessment : 100**

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
<b>2</b>	<b>1</b>		<b>2</b>

The purpose of this course is to help the students enhance their proficiency in oral and written communication in English to enable them to use English effectively at the corporate workplaces with global presence.

### **Objectives:**

The course aims at enabling the students to use English effectively for the purpose of:

- Using correct grammar and vocabulary
- Practice all aspects of English Language Skills required for a global professional
- Using English effectively in interpersonal and professional contexts
- Practice gathering ideas and information and organizing them coherently
- Practice writing technical papers, journal articles, project reports, and proposals
- Practice writing business letters, block letters, memos and emails

### **Course Outcomes:**

- Students will be able to use grammatically acceptable English
- Students will be able to demonstrate all aspects of language skills for a successful professional career
- Students will be able to use English effectively in interpersonal and professional contexts
- Students will be able to write technical content effectively
- Students will be able to handle business correspondence effectively

### **Course Work**

To achieve the objectives, the following course content is prescribed for the Business English and Technical Writing Laboratory Sessions.

### **Contents**

- Revision of grammar and vocabulary:
  - articles, prepositions, tenses, concord
  - voices, reported speech, sentence types
  - synonyms, antonyms, one word substitutes, idioms, collocations
  - word making, affixes, commonly used foreign words, words often confused
  - jumbled sentences and jumbled paragraphs
  - common errors in English pertaining to both grammar and vocabulary (TOEFL type)
- Reading Comprehension – practice tests
- Listening Comprehension – practice tests
- Speaking skills with focus on correct pronunciation

- Writing Cover Letters for Job Applications/ Resume Preparation/ Statement of Purpose for Internships, Apprenticeships, Admissions in Universities, etc.
- Writing Technical Reports/ Proposals/Formats of Research Articles, Journal Papers, Project Reports
- Email writing
- Writing Business Letters/ Formats of Letters, Block Letters/Memos

## References

1. Raj N Bakshi, "English Grammar Practice", Orient Longman.
2. Sangeeta Sharma & Binod Mishra, Communication Skills for Engineers and Scientists, PHI Learning Private Limited.
3. Marilyn Anderson, Pramod K.Naya and Madhucchanda Sen, Critical Reasoning, Academic Writing and Presentation Skills, , Pearson Publishers.
4. M. Ashraf Rizvi, Effective Technical Communication, Tata McGraw-Hill Publishing Company Ltd., 2005.
5. Raymond V. Lesikar, Marie E. Flatley, "Basic Business Communication: Skills for Empowering the Internet Generation", 11th Edition, Tata McGraw-Hill. 2006.
6. Dr A. Ramakrishna Rao, Dr G.Natanam & Prof S.A.Sankaranarayanan, "English Language Communication : A Reader cum Lab Manual", Anuradha Publications, Chennai, 2006.
7. Dr. Shalini Verma, "Body Language- Your Success Mantra", S.Chand, 2006.
8. Andrea J. Rutherford, "Basic Communication Skills for Technology", 2nd Edition, Pearson Education, 2007.

## **PRODUCT LIFE CYCLE MANAGEMENT (PLM)**

**(Global Elective for VI Sem B.Tech. ME)**

**Internal Assessment: 100**

**Contact Periods: (2L+2P) / Week**

**Credits: 2**

### **Course objective:**

The course will enable the student to get knowledge on Product life cycle management and Product development process, various PLM components, PLM architecture and hands on experience on one of the PLM tools.

### **Course outcomes:**

The student will able to

1. Understand Product life cycle management process.
2. Understand different steps in Product development process.
3. Get knowledge on Product data management
4. Understand the implementation of PLM and its impact on the organization

### **Unit -I**

Introduction to Java (background, facts, editions), JVM, Program Structure (basics of class, object, member variables, methods, naming conventions, static, System), Installing Java, Setting PATH, Compiling & Running a minimal program. Primitive data types, cast, NaN, Two's complement, Variables (rules, types), Operators, Control Structures.

### **Unit –II**

Arrays, Constructors, String class, Inheritance, Packages, Access modifiers

### **Unit -III**

Relational Databases, SQL and JDBC

### **Unit -IV - PLM Introduction-8 hours**

Organization Business Models(MTS, MTO, CTO, ETO Etc), Basics of Enterprise Systems (PLM, ERP, MES), Background, Overview, Need, Benefits, and Concept of Product Life Cycle, Components / Elements of PLM, Emergence of PLM, Significance of PLM, Differences between PLM and PDM. Integrated Product development process-Conceive-Specification, Concept design, Design- Detailed design, Validation and analysis (Simulation), Tool design , Realize-Plan manufacturing, Manufacture, Build/Assemble, Test(quality check).

### **Unit -V - PLM Components ( 20 hours Theory + 16 Hours Practical)**

Workflow Processes, Design Collaboration, Processes Management, Document Management, Visualization, Bill of Materials (BOM) Management, Engineering Change Control, Configuration Management, Manufacturing Process Management, Variant Management, Classification.

## Unit - VI - PLM Technologies (8 hours)

PLM Architecture, Various PLM tools, Data Modeling, Security management, CAD Integrations, Information authoring tools (e.g., MCAD, ECAD, Technical publishing), Core functions (e.g., data vaults), Data Flow to Other systems such as Supply chain and ERP systems. ( 4 hours for lab exercises)

### Text Books:

- **Grieves, Michael**, Product Lifecycle Management, McGraw-Hill, 2006. ISBN 0071452303
- **Antti Saaksvuori, Anselmi Immonen**, Product Life Cycle Management - Springer, 1st Edition (Nov.5, 2003)
- **Kari Ulrich and Steven D. Eppinger**, Product Design & Development, McGraw Hill International Edns, 1999.
- Burden, Rodger PDM: Product Data Management, Resource Pub, 2003. ISBN 0970035225
- Head First Java (English) 2 Edition- Kathy-Sierra-**Publisher:** O' Reilly

### References

- Java - The Complete Reference (English) 9th Edition-herbert-schildt-Mcgraw Hill Education
- PLM Terminology: <http://www.product-lifecycle-management.info/plm-resources/plm-terminology.html>
- [https://en.wikipedia.org/wiki/Product\\_lifecycle](https://en.wikipedia.org/wiki/Product_lifecycle)
- [https://en.wikipedia.org/wiki/Manufacturing\\_process\\_management](https://en.wikipedia.org/wiki/Manufacturing_process_management)
- <http://www.product-lifecycle-management.info/>
- [www.cimdata.com](http://www.cimdata.com)

PLM White papers: <http://www.product-lifecycle-management.info/plm-resources/plm-white-papers.html>

**GE403: Entrepreneurship Development (ED)**  
**(Global Elective for B. Tech. – VII Semester)**

**Scheme** : 2013  
**Internal assessment** : 100

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
<b>2</b>	-	-	<b>2</b>

**Course Objectives:**

- To promote entrepreneurial culture amongst students and help them acquire competencies needed for setting up small enterprises.

**Course Outcomes:**

- Be able to build on personal as well as external resources with a view to successfully launching and subsequently managing their enterprises.

**Unit - I**

Introduction: Concept of an entrepreneur; Definition of an entrepreneur; Types of entrepreneurs; Characteristics of an entrepreneur.

Entrepreneurship: Definitions; Theories of entrepreneurship; Key elements of entrepreneurship; Six important segments of entrepreneurship environment; Advantages of entrepreneurship; Barriers to entrepreneurship; Role of entrepreneurship in economic development.

**Unit – II**

Rural Entrepreneurship: Meaning; Need; Retrospection of rural industrialization in India; Problems of rural entrepreneurship; Development plan for rural entrepreneurship.

Small Enterprises : Definition of SSI; Types, Characteristics of SSI; Role of SSI in economic development; Problems faced by SSI.

**Unit – III**

Project Planning: Project Identification; Project Selection; Project Report – Contents & Formulation; Methods of Project Appraisal.

**Unit – IV**

Ownership Structures: Sole Proprietorship; Partnership; Company; Co-operative; Selection of appropriate ownership structure.

**Unit – V**

Institutional Finance: Commercial banks; Other Financial Institutions – IDBI, IFCI, ICICI, IRBI, SFC, SIDC, SIDBI & EXIM Bank.

**Unit – VI**

Institutional Support: Need; Support to Small Entrepreneurs – NSIC, SIDO, SSIB, SSIDC, SISI, DICs

**TEXT BOOKS:**

1. Prof. Satish C. Ailawadi & Mrs. Romy Banerjee, “*Principles of Entrepreneurship*”, Everest Publishing HousePub.

**REFERENCE BOOKS:**

1. S.S. Khanka, “*Entrepreneurial Development*”, S. Chand & Company Ltd. Pub.



**IDE306: INTRODUCTION TO INFORMATION SYSTEMS (IIS)**  
**(Interdisciplinary Elective for B. Tech. – VI Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam Marks : 70**

L	T/D	P	C
2	2	--	3

**Course Objectives:**

- Students will learn the fundamentals of computer organization , how operating systems are implemented, Assemblers, Compilers, Linkers, loaders, Interpreters, Software Development Life Cycle(SDLC)
- To Interpret an Entity Relationship Diagram(ERD) to express requirements and demonstrate skills to model data requirements and create Data models in to normalized designs

**Course Outcomes:**

Student will be able to:

- learn the concepts of computer organization, operating systems, compiler design including its phases and components and become acquainted with the life cycle of software project and its various phases
- use SQL, to create Database objects

**Unit-I**

**Fundamentals of Computers & Computer Architecture:** Introduction, Organization of a small computer, Central Processing Unit, Execution cycle, Instruction categories, measure of CPU performance Memory, Input/output devices, BUS, addressing modes

**System Software:** Assemblers, Loaders and linkers, Compilers and interpreters.

**Unit-II**

**Operating System:** Introduction, Process Management, CPU scheduling, Memory Management Schemes, Page replacement algorithms.

**Software Engineering:** Introduction to software engineering, Life cycle of a Software Project, Software Development Models.

**Unit-III**

**Coding Standards and Best Practices:** Introduction to C Programming, Basics of C Language, Data Types in C, Functions, arrays, pointers, structures.

**Sorting and Searching Techniques:** Searching Algorithms – Linear Search, Binary Search, Sorting Algorithms – Bubble Sort, Selecting Sort and Insertion Sort.

**Unit-IV**

**Relational Database Management System:** Introduction to DBMS, the database technology, data models. Database Users.

**Entity Relationship (E-R) Modeling:** Introduction, Notations, Modeling E-R Diagrams, Case Study1,2 & 3, Merits and Demerits of E-R modeling.

**Unit-V**

**Normalization:** Introduction, Need for Normalization, Process Normalization, Types of Normal Forms (1 NF, 2 NF, 3 NF & BCNF), Merits and Demerits of Normalization.

**Unit-VI**

**Structured Query languages (SQL):** History of SQL, Data Types, Data Definition Language Statements (DDL), Data Manipulation Language (DML), Data Control Language (DCL), writing simple queries.

**Text Books:**

1. Campus Connect Foundation Program – *Computer Hardware and System Software Concepts, Programming Fundamentals*- Vol. – 1, INFOSYS.
2. Campus Connect Foundation Program – *Relational Database management System, Client Server Concepts, Introduction to Web Technologies* - Vol. – 2, INFOSYS
3. Campus Connect Foundation Program – *Object Oriented Concepts – System Development Methodology, User Interface Design* - Vol. – 3, INFOSYS
4. Yashwant Kanetkar, *Let us ‘‘C’’* - bpb Publications 8th ed., 2007.

**Reference Books:**

1. Andrew S. Tanenbaum, *Structured Computer Organization*, PHI, 3rd ed., 1991
2. Silberschatz and Galvin, *Operating System Concepts*, 4th ed., Addison-Wesley, 1995
3. Wilbert O. Galitz, *Essential Guide to User Interface Design*, John Wiley, 1997
4. Alex Berson, *Client server Architecture*, Mc Graw Hill International, 1994
5. Henry F Korth, Abraham Silberschatz, *Database System Concept*, 2nd Edition, McGraw-Hill International editions, 1991
6. Roser S. Pressman, *Software Engineering-A Practitioners approach*, McGraw Hill, 5th ed., 2001

**NOTE:**

**Internal Assessment:** The question paper for sessional examination shall have one compulsory question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**ME212: MACHINE TOOLS LAB (MT(P))**  
**(For ME -IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	2	2

**Course Objectives:**

Understand the roll of metal removal processes in producing the components on different machines.

**Course Outcomes:** The Students learn

1. To produce the components from raw material to finished products by selecting the sequence of machining processes on Lathe machine, drilling machine, Milling machine, shaper, planner and slotting machine.
2. To produce Single point cutting tools on Tool and cutter grinder.

**3. To conduct alignment tests on machine tools.**

**LIST OF EXPERIMENTS**

1. Step turning
2. Taper turning by compound swivel method
3. Eccentric turning
4. Right hand thread cutting and Left hand thread cutting
5. Making of a Single point cutting tool by formed grinding wheel on tool cutter grinder.
6. Drilling, reaming, tapping and counter sinking
7. Pattern making
8. V- groove cutting on shaper.
9. Key way cutting on slotting machine and Spur gear cutting on milling machine
10. Wood turning
11. Alignment Tests on Lathe Machine
12. Alignment Tests on Radial Drilling Machine

**ME213: COMPUTER AIDED DRAFTING (CAD(P))**  
**(For ME -IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

<b>L</b>	<b>T/D</b>	<b>P</b>	<b>C</b>
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**Course Objectives:**

*To train students with skills related to computer aided drafting.*

**Course Outcomes:**

Students, being worked on computer aided drafting packages, gets hands on experience to draw two and three dimensional objects.

***LIST OF EXPERIMENTS***

**2D Drafting: AUTO CAD**

1. Introduction to CAD software
2. Exercise on usage of Auto CAD 2D Drawing Commands
3. Exercise on usage of Auto CAD 2D Editing Commands
4. Exercise on usage of Auto CAD 2D dimension commands
5. Exercises on Auto CAD 2D Drawings -I
6. Exercises on Auto CAD 2D Drawings - II

**3D Drafting : AUTO CAD**

7. Introduction to 3D Modeling Using Autocad Software
8. Modeling of Component in 3D – V block
9. Modeling of Component in 3D – Open Bearing
10. Modeling of Component in 3D – Angular block
11. Modeling of Component in 3D – Dovetail Guide
12. Modeling of Component in 3D – Dovetail Bracket
13. Modeling of Component in 3D – Dovetail stop

**EE213 :ELECTRICAL & ELECTRONICS ENGINEERING LAB (EEE(P))**  
**(For ME -III Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	2	2

**Course Objectives:**

1. To introduce students the practical aspects of various electrical machines.
2. To promote teamwork among students and effective communication skills
3. To develop in students the practical skills relevant to understand, analyze and operate various DC and AC electric machines.

**Course Outcomes:**

1. Understand the working principles of generator, motor, transformer and alternator.
2. Analyze the performance of DC and AC electric machines by conducting suitable tests.

**LIST OF EXPERIMENTS**

1. Swineburne's test
2. Brake test on D.C. Shunt Motor
3. OCC of D.C. Shunt Generator
4. O.C and S.C tests on single – phase transformer
5. Brake test on 3 – phase squirrel – cage induction motor
6. Determination of voltage regulation of 3 – phase alternator by synchronous impedance method
7. Study of CRO
8. Logic Gates and half adder
9. PN Diode and Zener characteristics
10. Half Wave and full wave Rectifiers
11. CE Configuration
12. CE Amplifier

**CE218 : MECHANICS OF SOLIDS AND FLUIDS LAB (MSF(P))**  
**(For ME -IV Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	2	2

**Course Objectives:**

1. To enable the students to acquire knowledge of flow meters.
2. Give student insight into working of various fluid machines and be able to compare performance of fluid machines under different working conditions.
3. To get familiarize the students with the use of stress, strain measuring instruments.

**Course Outcomes:**

1. To gain knowledge on working of centrifugal pumps, submersible pump and reciprocating pump.
2. To gain the knowledge of various flow meters and the concept of fluid mechanics.
3. The students will be able to understand procedures for conducting tensile, torsion tests on mild steel specimens
4. Determine the Young's modulus using deflection test on beams and tensile test on rods, tension and compression test on springs, and impact tests on steel.

**LIST OF EXPERIMENTS**

1. a) Determination of coefficients of discharge, velocity and contraction for a small orifice by 'Constant head method'.  
b) Determination of coefficient of discharge for an external mouthpiece by 'Constant head method'.
2. Determination of friction factor for a given pipe line.
3. a) Calibration of Venturimeter.  
b) Calibration of Orificemeter.
4. Performance test on single stage centrifugal pump.
5. Performance test on submersible pump.
6. Performance test on Reciprocating pump.
7. To study the stress-strain characteristics of Mild steel rod using Universal Testing Machine.
8. To find the modulus of elasticity of given material by measuring deflection in simply supported beam.
9. To find the modulus of rigidity of given material using Torsion Testing Machine.
10. To find the modulus of rigidity of given material using Spring Testing Machine.
11. To find modulus of elasticity by conducting flexural test on carriage spring.
12. (a) To find Rock well hardness number of given material  
(b) To find impact strength (Izod & Charpy) using impact testing machine.

**ME314: ENGINEERING METROLOGY LAB (EMT(P))**  
**(For ME -VI Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	2	2

**Course objective:**

This laboratory course will help the students to understand the need of precise measurements of various complicated contours

**Course outcome:**

After successful completion of this laboratory, the student will be able to know different measuring techniques and about the calibration using the gauging devices like limit gauges and measuring devices like tool maker. microscope, dial indicator, etc.

**LIST OF EXPERIMENTS**

1. Measurement of Screw Threads.
2. Measurement of angle of Taper plug gauge.
3. Measurement of angle of Taper ring gauge.
4. Measurement of co-ordinates of Jig plate.
5. Measurement of angle using Sine bar.
6. (a) Measurement of angle of the V-block using ball and height gauges.  
(b) Measurement of the Radius of Curvature.
7. Measurement of Gears parameters.
8. a) To find small angles and length measurement on objects using Tool Makers micro scope.  
b) To find small angles and length measurement on objects using Profile Projector
9. Measurement of surface roughness using surface roughness meter
10. Work Study- a) Method study b) Time study
11. Statistical Quality Control – X and R charts.
12. Acceptance Sampling
13. To collect the anthropometric data using “Anthropometer”.

**ME315: Database & Computational lab (DBC(P))**  
**(For ME -VI Semester)**

**Scheme : 2013**

**Internal Assessment : 30**

**End Exam : 70**

**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	2	2

**Course objective:** To impart basic database handling proficiency to the undergraduates and graduate students and to train them for scientific computing in different areas. Professional software, like SQL and MATLAB are provided for practice.

**Course outcomes:** Gain Practical knowledge in

- 1.The Data base management systems, SQL etc.
- 2.MATLAB basic operations and MATLAB programming.

**Cycle-I**

1. Introduction to Database Management System ( DBMS )
2. Creating database object ( Table),
3. Insertion of data, Retrieval of data
4. Manipulation of data and data transaction control
5. Set operators and joins
6. Arithmetic and logical operators
7. SQL functions
8. SQL formatting commands and sub queries

**Cycle-II**

1. Introduction to MAT lab and basic operations such as addition, multiplication etc.
2. Basic matrix operations such as matrix addition, matrix multiplication and computing determinant value of a matrix.
3. Random number generation
4. Basic MAT lab programming.



**ME 316: HEAT TRANSFER LAB (HT(P))**  
**(For ME -VI Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	2	2

**Course objective:**

**To study the conduction, convection and radiation heat transfer phenomenon practically.**

**Course outcomes:**

The student gain knowledge in

1. conduction heat transfer phenomenon
2. convection heat transfer phenomenon
3. Radiation heat transfer phenomenon

**LIST OF EXPERIMENTS**

1. Test on Composite wall
2. Test on Lagged pipe
3. Test on lagged sphere
4. a) Test on emissivity apparatus  
b) Test on critical heat flux apparatus
5. Test on Stefan Boltzman Apparatus
6. Test on Natural convection Equipment
7. Test on Pin fin Apparatus
8. Test on Heat Exchanger
9. Test on Drop wise and Film Wise Condensation apparatus
10. Test on heat pipe apparatus
11. Test on unsteady state heat transfer apparatus
12. Performance test on refrigeration tutor
13. a) Study of basic psychrometric processes on Air-conditioning Test Rig.  
b) Determination of COP and Bypass factor of Air-conditioning Test Rig
14. Test on Solar flat plate collector

**ME402: CAD/CAM(CADM)**  
**(For ME -VII Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
3	-	-	3

**Course objective:**

To study advanced features of CAD/CAM so as to be capable of accepting professional responsibilities and to understand the associativity between design and manufacturing

**Course outcomes:**

The student gain knowledge

1. On 3D modeling , geometric modeling and computer graphics

**2. Numerical control machines, Group technology, CAPP, CIM and flexible manufacturing systems.**

**Unit - I**

**Fundamentals of CAD :**The design process , applications of computers for design, benefits of CAD, Computer configuration for CAD application , Computer peripherals for CAD Design work station, Graphic terminal.CAD software - Definition of system software and application software. CAD database and structure.

**Geometric modelling :** 3- D wire frame modelling, wire frame entities and their definitions, Interpolation and approximation of curves, concept of parametric and non parametric representation of curves.

**Unit – II**

**Curve and Surface Modelling:** Generation of plane and space curves. Wire frame models and curve representation - parametric representation of curved shapes - cubic spline, Bezier, B-spline curves.Curve manipulations, Hidden line algorithms surface modelling.

**Solid Modelling:** Solid models and entities, solid representation, fundamentals of solid modelling, boundary representation (B-rep). Solid modellers, Constructive Solid Geometry (CSG) and sweep representation. Hidden surface algorithms, shading and colouring of surfaces, organization of solid modellers. Solid manipulations.

**Unit - III**

**Numerical Control of Manufacturing :** Numerical control ( NC ) definition, Classification of NC machines, Open loop, Closed loop, Absolute, Incremental system, Advantages of NC machines, Machining centre.Method of NC part programming, computer assisted programming, APT language, APT -statements, geometric statement, Motion statement, Post processing statement, Auxilary statements, Structure of APT programming, simple problems using APT language. CNC, DNC, Adaptive control.

**Unit - IV**

**Group Technology :** Group technology fundamentals, Part classification methods, coding systems, advantages of GT, applications of GT.

**Unit – V**

**Flexible Manufacturing Systems (FMS) :**Introduction, What is FMS, components of FMS, computer system configuration FMS layouts, FMS compared to other types of manufacturing systems, Types of FMS, benefits of FMS, applications of FMS.

**Unit – VI**

**Automated Material Handling :** Types of material handling equipment, Automated guided vehicles(AGVs), Vehicle guidance and routing; Traffic control, Benefits of AGV. Automated Storage and retrieval system.

**Computer Integrated manufacturing (CIM):** Computer integrated production planning systems, Computer aided process planning (CAPP)

**Text Books:**

1. M.P.Groover and E.W.Zimmers, CAD/CAM, PHI Publishers, New Delhi.
2. Mikell P. Groover, Automation Production Systems and Computer Integrated Manufacturing, PHI Publishers, New Delhi.
3. Ibrahim Zeid, CAD/CAM Theory and Practice, TMH Publishers, New Delhi.

**Reference Books :**

1. P. N. Rao “CAD/CAM principles and operations”, Tata McGraw Hill
2. Joe Rooney and Philip, Principles of CAD, EWP Publishers, New Delhi.

**Note:**

**Internal Assessment:** The question paper for sessional examination shall have one *compulsory* question carrying 6 marks and five other conventional (descriptive or analytical type) questions carrying 8 marks each. The compulsory question consists of objective type questions like the multiple choice, fill in the blanks etc. Apart from the compulsory question, the student has to answer any 3 from the remaining 5 conventional questions.

**End Exam:** The question paper for end examination shall consist of One Compulsory question consisting of objective type, fill in the blanks etc for 10 marks and for the remaining 60 marks student has to answer any four questions out of 6 questions for 15 marks each.

**ME405: CAE LAB (CAEP)**  
**(For ME -VII Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	3	2

**Course objective:**

To get familiarize with analysis of different structures using ANSYS

**Course outcomes:**

The student will be able to do

1. Stress analysis of trusses
2. Stress analysis of beams
3. Stress analysis of 2D and 3D structures
4. Thermal analysis of plate.

**List of experiments using ANSYS**

1. Introduction to ANSYS software
2. Analysis of 2D Truss
3. Analysis of plate with a hole subjected to tensile load
4. Analysis of flat rectangular plate with a hole under axi-symmetric conditions
5. Analysis of a bracket
6. Stress and deflection Analysis of cantilever beams
7. Stress analysis of simply supported beams
8. Analysis of bars with different materials
9. Analysis of taper bar
10. Coupled structural and thermal analysis
11. Exercise on simple conduction
12. Analysis of square plate considering conduction and convection
13. Model analysis of beams

**ME406: CAM LAB (CAMP)**  
**(For ME -VII Semester)**

**Scheme : 2013**  
**Internal Assessment : 30**  
**End Exam : 70**  
**End Exam Duration : 3 Hrs**

L	T/D	P	C
-	-	3	2

**Course objective:**

To get familiarize with different manufacturing software

**Course outcomes:**

After completion of laboratory students are able to

1. Simulate components in ESPIRIT CAM, MASTER CAM, CNC TUTOR.
2. Developing CNC part programs using G and M codes and manufacture prototypes on CNC machines.
3. Produce simple components on 3D printer.

**LIST OF EXPERIMENTS**

1. CNC Part Programming on ESPIRIT CAM LATHE.
2. CNC Part Programming on ESPIRIT CAM MILLING.
3. CNC Part Programming on MASTER CAM LATHE.
4. CNC Part Programming on MASTER CAM MILLING.
5. Producing Work piece on HITECH CNC LATHE( Step Turning)
6. Producing Work piece on HITECH CNC LATHE (Taper Turning).
7. Producing Work piece on HITECH CNC LATHE ( Radius turning)
8. Producing Work piece on HITECH CNC MILLING ( Model-1)
9. Producing Work piece on HITECH CNC MILLING ( Model-2)
10. Producing a simple model using 3D Printing

**ME410: DYNAMICS & INSTRUMENTATION LAB (DIN(P))**  
**(For ME -VIII Semester)**

**Scheme** : 2013  
**Internal Assessment** : 30  
**End Exam** : 70  
**End Exam Duration** : 3 Hrs

L	T/D	P	C
-	-	3	2

**Course objective:**

To study the static and dynamic behaviour of machines

**Course outcomes:**

Students will be able to

1. Understand and use various measurement methods
2. Understand and verify the laws governing the dynamics of machines
3. Understand the case studies in the field of Vibration.

**LIST OF EXPERIMENTS**

**DYNAMICS**

1. Determination of Radius of Gyration of Connecting Rod
2. Longitudinal Vibrations of Spring-Mass System.
3. Experiment on Governors
4. Static and Dynamic balancing of rotating masses and reciprocating masses
5. Velocity & Acceleration of Cam & Follower
6. Test on Gyroscope
7. Study of Damped and Undamped Torsional Vibration
8. Torsional Vibration of Single and Two Rotor System
9. Verification of Dunkerly's Rule
10. Critical speed or Whirling speed of shaft

**INSTRUMENTATION**

1. Test on Instrumentation Tutors
2. Calibration of Dead Weight Presser Gauge.
3. Study of simple control systems
4. Calibration of rotameter