

## Syllabus copy of courses 2018 - 2019

### SOFT SKILLS LAB (SSP)

III/IV Semester:	Common for all Branches				Scheme : 2017	
Course Code	Hours / Week			Credits	Maximum Marks	
<b>HU204</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Continuous Internal Assessment</b>	<b>TOTAL</b>
	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>100</b>	<b>100</b>
<b>Course Outcomes :</b> At the end of the course, students will be able to						
<b>CO1:</b>	Communicate effectively and enhance their interpersonal relationship building skills with renewed self confidence					
<b>CO2:</b>	Work together in teams and accomplish objectives in a cordial atmosphere					
<b>CO3:</b>	Face interviews, GDs and give presentations					
<b>CO4:</b>	Understand and develop the etiquette necessary to present themselves in a professional setting					
<b>CO5:</b>	Learn the Principles of Personal effectiveness					
<b>LIST OF EXPERIMENTS</b>						
1. Ice breaking Activities, Principles of Time and Stress Management						
2. Art of speaking -1 (Prepared)						
3. Art of speaking -2 (Extempore)						
4. Art of writing - Essay / Picture / Story						
5. Business etiquette - Telephone and email						
6. Presentation Skills - Power point making						
7. Group Discussion – Objectives and Skills tested in a GD, types of GD, Dos and don'ts						
8. Group Discussion - Practice						
9. Team work - Drama / Skit / Role play						
10. Paper / Poster Presentation						
11. Problem Solving by lateral thinking puzzles						
12. Know your General Awareness / Knowledge - Quiz						
13. Principles of Personal excellence						
<b>Reference Books:</b>						
1. Stephen R. Covey, “The Seven Habits of Highly Effective People”, Pocket Books Publishers, London						
2. Priyadarshani Patnaik, “Group Discussion and Interview Skills with VCD”, Foundation Books						
3. Sangeeta Sharma & Binod Mishra, “Communication Skills for Engineers and Scientists”, PHI Learning Private Limited						
4. Shiv Khera, “You Can Win”, MacMillan India Publishers, New Delhi						

5. Campus Connect Portals - TCS - [https://campuscommune.tcs.com](https://campuscommune.tcs.com;); Infosys - <http://campusconnect.infosys.com/>

### ADVANCED COMMUNICATION SKILLS LAB (ACSP)

III / IV Semester:	Mechanical Engineering				Scheme : 2017	
Course Code	Hours / Week			Credits	Maximum Marks	
HU203	L	T	P	C	Continuous Internal Assessment	TOTAL
	0	0	2	1	100	100

**Course Outcomes :** At the end of the course students will be able to

<b>CO1:</b>	Speak in English confidently, fluently and effectively
<b>CO2:</b>	Exhibit team playing and leadership skills
<b>CO3:</b>	Give Presentations effectively
<b>CO4:</b>	Comprehend the Verbal and Non-verbal texts
<b>CO5:</b>	Prepare Resume, Company profiles and Project presentations
<b>CO6:</b>	Enhance possibilities of Job prospects

#### LIST OF EXPERIMENTS

Focus in the lab is more on fluency than on accuracy

1. Ice breaking Activities

2. JAM

3. Listening Comprehension – Practice tests

4. Oral Presentation

5. Presentation Strategies

6. Group Discussion – Team Playing, Leadership Skills

7. Debate

8. PPT's – Principles and Formats

9. Information Transfer – Verbal to Non-verbal and Vice-Versa

10. Resume Preparation

11. Company Profiling

12. Interview Skills – a) Telephonic Interview  
b) Personal Interview

13. Project Presentation

#### Reference Books:

1. Communication Skills, Sanjay Kumar and PushpaLata, Oxford University Press.

2. English Language Laboratories, A Comprehensive Manual, Nira Konar, PHI.

3. Technical Communication, 3 E, Raman and Sharma, Oxford University Press.

## **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**

L	T/D	P	C
2	-	-	2

**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.

**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