Dr. V.P.S.S.M's

# Padmabhooshan Vasantraodada Patil Institute of Technology, Budhgaon (Sangli)

## Student Information Manual (SIM ) 2023-24 SEM-II

**First Year B. Tech.**

**Dr. V. P. ShetkariShikshanMandal's**

PadmabhooshanVasantraodadaPatil

Institute of Technology, Budhgaon– 416304

# STUDENT'S INFORMATION MANUAL

**(Academic Year: 2023-24)**

**Semester-II**

**Teaching and**

**Evaluation Scheme**

**For**

**First Year B. Tech.**

**Group B**

# Department of First Year Engineering

# Department of First Year Engineering

The Department of **First Year Engineering** is established in the year 1983 with the establishment of institute. The department has a good collaboration of experienced and young faculty which works as a team to strengthen the department.

## VISION OF DEPARTMENT

To orient, educate and develop students in applying fundamentals of sciences to Engineering leading to smooth and successful transfer to an undergraduate degree engineering program.

## MISSION OF DEPARTMENT

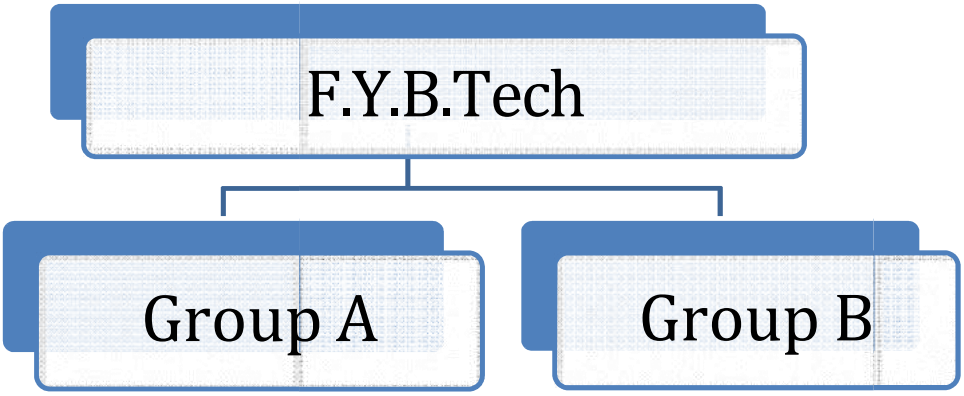
1. To create an environment where students can ascertain that career in engineering matches their interests and abilities.
2. To impart strong fundamental and technical knowledge in the basic science subjects to enable them to prepare themselves for successful career.
3. To inculcate habbit of innovation and entrepreneurship.

## GOALS

1. To achieve 100 % results in academics.
2. To inculcate competitive attitude by supporting and guiding them to participate in national competition.
3. To develop basic skills and human values required to undertake further studies.

# STRUCTURE OF FIRST YEAR ENGINEERING

(With effective from Academic Year 2023-24)




**Group A**

1. **Computer Science and Engineering**
2. **Computer Science and Engineering (AI&DS)**
3. **Electronics and Computer Science Engineering**
4. **Instrumentation and control Engineering**

**Group B**

1. **Chemical Engineering**
2. **Civil Engineering**
3. **Mechanical Engineering**
4. **Mechatronics Engineering**
5. **Electronics & Telecommunication Engg.**
6. **Electrical and Computer Engineering**

# INDEX

## THE ROLE OF STUDENTS

As our society/ nation grows and becomes technologically more strong/ complex, it needs more trained Engineers. Students can contribute to this professional growth by playing an effective and disciplined role during their studies.

**Responsibilities:**

1. 100% Attendance and active participation in all academic activities.
2. Self-discipline and good relations with other students, teaching and support staff.
3. Positive attitude, motivation and technical thinking.
4. Participation in Co-Curricular and Extra-Curricular activities.
5. Carrying Identity Card and following the College Dress Code.
6. Pursuing all-round personality development with good generic skills.
7. Following the Code-of-Conduct laid down by the Department, Institute and University.

**Code-of-Conduct: Students Shall**

- Attend all Lecture's and Practical's in time.
- Not take common off, Leave without permission.
- Roaming in the campus premises during academic work or disturbing the campus activities through shouting/ misconduct is strictly not allowed.
- Use of personal unauthorized electronic gadgets without permission in department premises is not allowed.
- Attendance should be 100 % otherwise you will be ineligible for Exams.
- Not include themselves into any form of violence, ragging, use of tobacco, alcohol or drugs in campus.
- Let us all- Society, parents, teachers and students join hands and put our best efforts to imbibe the above mentioned behavior in our students.
- Maintain silence in class rooms
- Don't write anything on seating bench and walls of classroom
- Keep their mobiles switched off in classroom.
- Your reason of absence should be timely informed to your class teacher with written application.
- Help to conserve energy, Switch off fans and tubes before leaving the classroom.
- Keep the Classrooms clean.

# Laboratory Instructions

## Laboratory Instructions

- Read all the instructions carefully.
- Always keep silence in the laboratory.
- Keep your mobiles switched off in the laboratory.
- Always wear an apron before starting your laboratory work.
- Handle hazardous chemicals and concentrated chemicals carefully.
- Handle all electronics Devices/Equipment's carefully.
- Follow safety procedures and avoid damage to self and equipment.
- Be aware with what you are doing and why you are doing it.
- Except in emergency, don't run in laboratory.
- Inform the lab assistant or lab in-charge when any fault arises during the performance of an experiment.
- Report any not working equipment to the lab instructor; don't open/ remove the cover/ attempt to repair any equipment.
- Keep the working table always neat and clean.
- Be aware with the place of fire extinguisher and the method of using it.
- If any accident occurs, report it at once to the person concerned (Lab In charge).
- Use laboratory first aid box for any minor accident.
- Help to conserve energy, Switch off the equipment's tubes and fans before leaving the laboratory.
- Do not move the instruments from one laboratory to another, without permission.

# First Year B. Tech. Teaching and Evaluation Scheme

## Group B Semester II

### (Chemical/ Civil / Mechanical / Mechatronics / Electronics and telecommunication /Electrical and Computer Science Engineering)

| Sr. No | Course Code | Name of Course | Teaching Scheme | | | Evaluation Scheme | | | | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | CA | MSE | ESE | Total | |
| 1 | BTBS201 | Engineering Mathematics-II | 3 | 1 | - | 20 | 20 | 60 | 100 | 4 |
| 2 | BTBS202 | Engineering Chemistry | 3 | 1 | - | 20 | 20 | 60 | 100 | 4 |
| 3 | BTES203 | Engineering Mechanics | 2 | 1 | - | 20 | 20 | 60 | 100 | 3 |
| 4 | BTES204 | Computer Programming in C | 3 | - | - | 20 | 20 | 60 | 100 | 2 |
| 5 | BTES205 | Workshop Practices | - | - | 4 | 60 | - | 40 | 100 | 2 |
| 6 | BTES206 | Basic Electrical and Electronics Engineering | 2 | - | - | 50 | - | - | 50 | Audit |
| 7 | BTES207L | Computer Programming Laboratory | - | - | 2 | 60 | - | 40 | 100 | 1 |
| 8 | BTBS208L | Engineering Chemistry Laboratory | - | - | 2 | 60 | - | 40 | 100 | 1 |
| 9 | BTE209L | Engineering Mechanics Laboratory | - | - | 2 | 60 | - | 40 | 100 | 1 |
| | | **Total** | **13** | **3** | **10** | **370** | **80** | **400** | **850** | **18** |

## COURSE CO-ORDINATOR

| Sr. No. | Course | Corse Code | Course Coordinator | Emailid | Contact No. |
|---|---|---|---|---|---|
| 1 | Engineering Mathematics-II | BS201 | Mr. R. U. Yadav | ruyadav.ge@pvpitsangli.edu.in | 7776074138 |
| 2 | Engineering Chemistry | BS202 | Ms. D. A. Lavate | dalavate.ge@pvpitsangli.edu.in | 8788009691 |
| 3 | Engineering Mechanics | ES203 | Mr. A. A. Kusnale | aakusanale.civil@pvpitsangli.edu.in | 8888978808 |
| 4 | Computer Programming in C | ES204 | Mrs. M. S. Patil | mayuri.patil4017@gmail.com | 9673784017 |
| 5 | Workshop Practice | ES205L | Mr. N. D. Patil | ndpatilmech@pvpitsangli.edu.in | 7218420242 |
| 6 | Basic Electrical and Electronic Engineering | ES206 | Mrs. A. B. Patil | ashupatil1012@gmail.com | 7758998115 |

**NOTE:** Any query or suggestion in above subject should contact with respective subject Coordinator

## CLASS TEACHERS

| Sr. No. | Class/ Div | Class Teachers | Department | Email id | Contact No. |
|---|---|---|---|---|---|
| 01 | I | Ms. P. B. Patil | Chemistry | patilprajakta9102@gmail.com | 9518599062 |
| 02 | II | Dr. S. L. Patil | Physics | slpatil.ge@pvpitsangli.edu.in | 9423269875 |
| 03 | III | Mrs. S. P. Mandale | Mathematics | spm.ge@pvpitsangli.edu.in | 9172035381 |
| 04 | IV | Ms. A. K.Patil | Mathematics | ashwinipatil10599@gmail.com | 9623653978 |
| 05 | V | Mrs. D. A. Lavate | Chemistry | dalavate.ge@pvpitsangli.edu.in | 8788009691 |
| 06 | VI | Mr. A. K. Chavan | Communication Skill | chavanak01@gmail.com | 9834750779 |
| 07 | VII | Ms. G. G. Chinde | Physics | chindegandhali@gmail.com | 9970371111 |

# COURSE TEACHERS

## SEM-I

| Division/Class / Course | I | III | V |
|---|---|---|---|
| **Engineering Mathematics-I** | Mr. R. U. Yadav | Mrs. S. P. Mandale | Mrs. A. V. Patil |
| **Engineering Chemistry** | Ms. P. B. Patil | Ms. P. B. Patil | Mrs. D. A. Lavate |
| **Engineering Mechanics** | Mr. A. A. Kusnale | Mr. N. S. Bembade | Mrs. G. D. Mali |
| **Computer Programming in C** | Mrs. A. G. Chendke | Mrs. M. S. Patil | Mrs. S. S. Patil |
| **Basic Electrical and Electronic Engineering** | Mrs. S. S. Patil<br>Mrs. A. B. Patil | Mrs. S. S. Patil<br>Mrs. A. B. Patil | Mrs. S. S. Patil<br>Mrs. A. B. Patil |

# ACADEMIC CALENDAR 2023-24 SEM-II

Dr. Vasantraodada Patil Shetkari Shikshan Mandal's

**Padmabhooshan Vasantraodada Patil Institute of Technology, Budhgaon Sangli – 416 304**

## Academic Calendar (2023-24) Semester II

**February 2024 - Academic Days: 22**

| M | T | W | T | F | S | S |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | | | |

| | |
|---|---|
| Commencement of Term | 1st Feb 2024 |
| Chhatrapati Shivaji Maharaj Jayanti | 19th Feb 2024 |
| Science Day | 28th Feb 2024 |
| List of students not reported | 29th Feb 2024 |
| 1st Defaulter List | 29th Feb 2024 |

**March 2024 - Academic Days: 21**

| M | T | W | T | F | S | S |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

| | |
|---|---|
| Late Vasantdada Punyatithi | 1st Mar 2024 |
| Mahashivratri and Women's Day | 8th Mar 2024 |
| CA 1 Evaluation | 6th-9th Mar20 24 |
| Dhulivandan | 25th Mar 2024 |
| Good Friday | 29th Mar 2024 |
| 2nd Defaulter List | 31st Mar 2024 |

**April 2024 - Academic Days: 21**

| M | T | W | T | F | S | S |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | | | | | |

| | |
|---|---|
| Gudi Padwa | 9th Apr 2024 |
| Ramzan Id | 11th Apr 2024 |
| Dr.Babasaheb Ambedkar Jayanti | 14th Apr 2024 |
| Shri Ram Navami | 17th Apr 2024 |
| Mahavir Jayanti | 21st Apr 2024 |
| Mid Semester Exam | 18th – 19th Apr 2024 |
| Display of Mid Sem Marks | 25th – 27th Apr 2024 |
| Parents Meeting | 27th April 2024 |
| Annual Social Gathering | |
| 3rd Defaulter List | 30th Apr 2024 |

**May 2023 - Academic Days: 18**

| M | T | W | T | F | S | S |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

| | |
|---|---|
| Maharashtra Day | 1st May 2024 |
| CA 2 Evaluation | 20th-22nd May 2024 |
| Buddha Pournima | 23rd May 2024 |
| Sports Week | |
| End of Classes | 25th May 2024 |
| Final Defaulter List | 25th May 2024 |
| Practical Examination | 27th – 31st May 2024 |

**June 2024 - Academic Days: - NIL**

| M | T | W | T | F | S | S |
|---|---|---|---|---|---|---|
| | | | | | 1 | 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

| | |
|---|---|
| End Semester & Supplementary Exam | 3rd – 14th June 2024 |
| Bakri Id | 17th June 2024 |

Dr..K..K. Pandyaji
**Dean Academics**

Dr. B.S.Patil
**Principal**

Academic Activity | Co-curricular activity | Holidays | Events | Academic Compliance

| | | |
|---|---|---|
| | Dr. Vasantraodada Patil Shetkari Shikshan Mandal's<br>**Padmabhooshan Vasantraodada Patil Institute Of Technology, Budhgaon. (Sangli)**<br>**FIRST YEAR ENGINEERING DEPARTMENT (F. Y. B. Tech)**<br>**TIMETABLE 2023-24 SEM-II** | **With Effect From 01/02/2024** |

# TIME TABLE

Dr. Vasantraodada Patil Shetkari Shikshan Mandal's

## Padmabhooshan Vasantraodada Patil Institute of Technology, Sangli

## FIRST YEAR ENGINEERING DEPARTMENT (F. Y. B. Tech)

## TIMETABLE 2023-24 SEM-II

*With Effect From 01/02/2024*

**Class:-** FE-I **Branch:-** Mechanical+ Chemical+ Mechatronics **CHEMISTRY Group** **CL-03**

| Sr. No. | TIME IN HRS | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|---|---|---|---|---|---|---|---|
| 1 | 10:00 TO 11:00 | A1-ES203(T)/LVH<br>A2- ES205L<br>A3- BS207L | BS201- RUY | A1- ES208L<br>A2-ES203(T)/LVH<br>A3- ES205L | BS201- RUY | BS202- PBP | # TPO Session / Guest Lec. / M-M / Counselor Int. |
| 2 | 11:00 TO 12:00 | | ES203-AAK | | ES204- TSU | ES204- TSU | |
| | 12:00 TO 12.45 | LONG RECESS | | | | | |
| 3 | 12.45 TO 13:45 | BS202- PBP | A1- ES205L<br>A2- BS207L<br>A3- ES208L | ES206- SSP | BS202- PBP | A1- ES205L<br>A2- ES210S<br>A3- 202(T)/201(T) | LVH |
| 4 | 13:45 TO 14:45 | BS201- RUY | | ES204 -TSU | ES206- ABP | | @- IITST- |
| | 14:45 TO 15:00 | SHORT RECESS | | | | | |
| 5 | 15:00 TO 16:00 | *A1- ES209L<br>*A2- ES209L<br>*A3- ES209L | A1- ES210S<br>A2- 202(T)/201(T)<br>A3- ES205L | A1- BS207L<br>A2- ES208L<br>A3- ES210S | ES203- AAK | A1- 202(T)/201(T)<br>A2- ES205L<br>A3- ES203(T)/LVH | |
| 6 | 16:00 TO 17:00 | | | | *BS201- RUY | | |

RUY-R U Yadav /PBP-/P B Patil AAK-A A Kusnale /TSU- /T S Upadhye /SSP-S S Patil /ABP-A B Patil

# M-M / Counselor Int. Mentee –Mentor or Counselor Interaction *-Extra (T)-Tutorial # - Alternate LVH-Library Visit Hour @- IITST-*IIT Spoken Tutorial*

| Sr. No. | Course Code | Name of the Course | Sr. No. | Course Code | Name of the Course | Sr. No. | Course Code | Name of the Course |
|---|---|---|---|---|---|---|---|---|
| 1 | BS201 | Engineering Mathematics-II | 4 | ES204 | Computer Programming in C | 7 | BS207L | Engineering Chemistry Laboratory |
| 2 | BS202 | Engineering Chemistry | 5 | ES205L | Workshop Practices | 8 | ES208L | Engineering Mechanics Laboratory |
| 3 | ES203 | Engineering Mechanics | 6 | ES206 | Basic Electrical & Electronics Engineering | 9 | ES209L | Computer Programming in C Laboratory* |
| | | | | | | 10 | ES210S | Seminar |

(Dr. Sanjay L. Patil) **Time-Table Coordinator (F. Y. B. Tech.)**

(Dr. Anushka A. Patil) **HOD (F. Y. B. Tech.)**

(Dr. K. K. Pandyaji) **Academic Dean**

(Dr. B. S. Patil) **I/C Principal**

Dr. Vasantraodada Patil Shetkari Shikshan Mandal's

## Padmabhooshan Vasantraodada Patil Institute of Technology, Sangli

### FIRST YEAR ENGINEERING DEPARTMENT (F. Y. B. Tech)

### TIMETABLE 2023-24 SEM-II

*With Effect From 01/02/2024*

**Class:** FE-**III** **Branch: Elect. & Telecomm. Engg.** **CHEMISTRY Group** **CL-04**

| Sr. No. | TIME IN HRS | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|---|---|---|---|---|---|---|---|
| 1 | 10:00 TO 11:00 | ES203- **NSB** | BS202- **PBP** | C1- 202(T)/201(T)<br>C2- ES205L<br>C3- BS207L | ES204- **MSP** | BS201- **SPM** | # TPO Session / Guest Lec. / M-M/ Counselor Int. |
| 2 | 11:00 TO 12:00 | ES206- **SSP** | ES203- **NSB** | | BS202- **PBP** | BS202- **PBP** | |
| | 12:00 TO 12.45 | | | **LONG** | **RECESS** | | |
| 3 | 12.45 TO 13:45 | ES204- **MSP** | C1- ES205L<br>C2- ES210S<br>C3- 202(T)/201(T) | BS201- **SPM** | C1- ES205L<br>C2- BS207L<br>C3- ES203(T)/LVH | C1- BS207L<br>C2- ES208L<br>C3- ES210S | LVH |
| 4 | 13:45 TO 14:45 | BS201- **SPM** | | ES204- **MSP** | | | @- IITST |
| | 14:45 TO 15:00 | | | **SHORT** | **RECESS** | | |
| 5 | 15:00 TO 16:00 | C1- ES210S<br>C2- ES203(T)/LVH<br>C3- ES205L | C1- ES203(T)/LVH<br>C2- ES205L<br>C3- ES208L | *C1- ES209L<br>*C2- ES209L<br>*C3- ES209L | ES206-**ABP** | C1- ES208L<br>C2- 202(T)/201(T)<br>C3- ES205L | |
| 6 | 16:00 TO 17:00 | | | | *BS201- **SPM** | | |

**SPM-/S P Mandale /PBP-/P B Patil NSB- N S Bembade /MSP- /M S Patil /SSP-S S Patil /ABP-A B Patil**

**# M-M / Counselor Int. Mentee –Mentor or Counselor Interaction *-Extra (T)-Tutorial # - Alternate LVH-Library Visit Hour @- IITST-*IIT Spoken Tutorial***

| Sr. No. | Course Code | Name of the Course | Sr. No. | Course Code | Name of the Course | Sr. No. | Course Code | Name of the Course |
|---|---|---|---|---|---|---|---|---|
| 1 | BS201 | Engineering Mathematics-II | 4 | **ES204** | Computer Programming in C | 7 | **BS207L** | Engineering Chemistry Laboratory |
| 2 | BS202 | Engineering Chemistry | 5 | **ES205L** | Workshop Practices | 8 | **ES208L** | Engineering Mechanics Laboratory |
| 3 | ES203 | Engineering Mechanics | 6 | **ES206** | Basic Electrical & Electronics Engineering | 9 | **ES209L** | Computer Programming in C Laboratory* |
| | | | | | | 10 | ES210S | Seminar |

(Dr. Sanjay L. Patil)
**Time-Table Coordinator**
**(F. Y. B. Tech.)**

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# Padmabhooshan Vasantraodada Patil Institute of Technology, Sangli

## FIRST YEAR ENGINEERING DEPARTMENT (F. Y. B. Tech)

## TIMETABLE 2023-24 SEM-II

*With Effect From 01/02/2024*

**Class:- FE-V Branch: Electrical & Computer +Civil Engg. CHEMISTRY Group CL-03/05/07**

| Sr. No. | TIME IN HRS | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|---|---|---|---|---|---|---|---|
| 1 | 10:00 TO 11:00 | ES206- ABP (CL03) | E1- ES210S E2- ES205L E3- ES203(T)/LVH | ES204- SSP (CL03) | E1- BS207L E2- ES208L E3- ES205L | BS201- AVP (CL05) | # TPO Session / Guest Lec. / M-M / Counselor Int. |
| 2 | 11:00 TO 12:00 | BS201- AVP (CL03) | | BS202- DAL (CL03) | | ES206- SKS (CL05) | |
| | 12:00 TO 12.45 | SHORT | | | RECESS | | |
| 3 | 12.45 TO 13:45 | E1- ES205L E2- 202(T)/201(T) E3- ES210S | BS202- DAL (CL03) | E1- ES205L E2- BS207L E3- ES208L | E1- ES208L E2- ES210S E3-202(T)/201(T) | ES204- SSP (CL03) | *LVH* |
| 4 | 13:45 TO 14:45 | | ES204 -SSP (CL03) | | | ES203- GDM (CL03) | @- IITST- |
| | 14:45 TO 15:00 | SHORT | | | RECESS | | |
| 5 | 15:00 TO 16:00 | E1-ES203(T)/LVH E2- ES203(T)/LVH E3- BS207L | ES203- GDM (CL03) | E1- 202(T)/201(T) E2- ES205L E3- ES205L | BS202- DAL (CL07) | *E1- ES209L *E2- ES209L *E3- ES209L | |
| 6 | 16:00 TO 17:00 | | BS201- AVP (CL03) | | *BS201- AVP (CL07) | | |

**AVP-/A V Patil /DAL- /D A Lavate /GDM- /G D Mali /SSP-/S S Patil SKS- S K Shaikh /ABP-A B Patil**

**# M-M / Counselor Int. Mentee –Mentor or Counselor Interaction *-Extra (T)-Tutorial # - Alternate LVH-Library Visit Hour @- IITST-*IIT Spoken Tutorial***

| Sr. No. | Course Code | Name of the Course | Sr. No. | Course Code | Name of the Course | Sr. No. | Course Code | Name of the Course |
|---|---|---|---|---|---|---|---|---|
| 1 | BS201 | Engineering Mathematics-II | 4 | ES204 | Computer Programming in C | 7 | BS207L | Engineering Chemistry Laboratory |
| 2 | BS202 | Engineering Chemistry | 5 | ES205L | Workshop Practices | 8 | ES208L | Engineering Mechanics Laboratory |
| 3 | ES203 | Engineering Mechanics | 6 | ES206 | Basic Electrical & Electronics Engineering | 9 | ES209L | Computer Programming in C Laboratory* |
| | | | | | | 10 | ES210S | Seminar |

(Dr. Sanjay L. Patil) **Time-Table Coordinator (F. Y. B. Tech.)**

(Dr. Anushka A. Patil) **HOD (F. Y. B. Tech.)**

(Dr. K. K. Pandyaji) **Academic Dean**

(Dr. B. S. Patil) **I/C Principal**

# DEPARTMENTAL ACTIVITY

## 1) MENTORING ACTIVITY:

Each faculty from respective branch has been **assigned some students for mentoring.** Mentoring Forms (Student Information Form) are maintained by mentor (faculty), which involves **details of students** such as Date of Birth, Blood Group, Mail –ID, Parents information, academic information, his/her involvement in different activities. **At least once in a week interaction with the concerned students is done by respective mentor.**

Through interaction their difficulties **from department, hostel and amenities are known.** The suggestions and difficulties from the interaction are **conveyed to higher authorities** on whom corrective actions are taken. **Personal difficulties** during the interaction are also shared by the students. On which appropriate guidance and help is provided. The mentoring batch allotted is continued till the student completes his/her graduation.

Professional guidance is provided by arranging lectures of eminent personalities from Academic, Industry and Social spheres. Lectures of faculty from other institutions are organized. Mentoring includes **professional guidance, carrier advancement/ course work specific/ lab specific/ total development.**

**Note:**

i. Student should collect **Mentoring Forms (Student Information Form)** from Respective **Mentors** and fill this form within **one week from the Commencement of Term and classes.**
ii. Student should attend Mentoring Lectures as per Time Table Schedule.
iii. **At least once in a week** interaction with the concerned Mentor is done by respective student.

## COUNSELING ACTIVITY

- **Encourage students** to discuss their ideas.
- Help to **lower stress and build confidence.**
- Increases personal knowledge and organizational awareness.
- Gives wisdom, advice, help and encouragement.
- Develops an environment that supports constructive criticism.
- Experiencing greater self-esteem and motivation to succeed.
- Improving interpersonal relationship such as with teacher and family.
- Receiving assistance in choosing a carrier path.

### Counselor expert: Mrs. Archana Muley (Mobile: 9823787214)

Internal expert may be Dean, Head of department, Coordinators, Class Teachers, Mentors etc. whereas external expert may be related to medical field. **Counselor** as a mentor has been **assigned for each student.** Counseling sheets are maintained by

**Counselor** (Mentor), **at least once in each week interaction with the concerned class is done by respective counselor.**

## CLASS TEACHER

- Receiving assistance with academic endeavors.
- Constructive interaction with a class teacher and participation in collective activities he or she arranges engagement in the field.
- Receiving encouragement to stay in college.
- Receiving assistance in the understanding of subject.
- It supports their advancement in research activity, conference, presentation, publication, pedagogical skill etc.
- Student should collect **Leave Application Form** from Class Teacher
- Defaulter Student should contact with their Class Teacher /Mentor/ Head of First Year Engg. Dept. (/Dr. Mrs. A. A. Patil) within 2-3 days after displaying Defaulter List on notice board as well as on college web site.

## REMEDIAL LECTURES

Extra lectures are arranged for those students who are either weak in particular subject or failed in previous semester.

**Note:** 1) Student should **attend Remedial Lectures** as per Time Table Schedule.
**2)** Time Table Schedule for Remedial Lectures will be display after completion of Mid/End Term Test.

## CO/EXTRA CURRICULAR ACTIVITIES:

Paper/PPT Presentation, Nirmiti, Vasantostav Sports activity benefits the student to participate in extracurricular activities.

| Date | Activity Name | Participation level | Outcome |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

***REMARKS:*** Student should submit Xerox copy of certificates obtained from Co/Extra Curricular Activities to Class Teacher .

# ANTI-RAGGING ACTIVITY

## ANTI-RAGGING RULES AND REGULATIONS

Ragging is a criminal offense as per act no.1098 (113/98) WISHI-3, 27-5-99.

**What Constitutes Ragging?**

Ragging constitutes one or more of any of the following acts:

- Any conduct by any student or students whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness a fresher or any other student.
- Asking any student to do any act which such student will not in the ordinary course do and which has the effect of causing or generating a sense of shame, or torment or embarrassment so as to adversely affect the physique or psyche of such fresher or any other student.
- Any act by a senior student that prevents, disrupts or disturbs the regular academic activity of any other student or a fresher.
- Exploiting the services of a fresher or any other student for completing the academic tasks assigned to an individual or a group of students.
- Any act of financial extortion or forceful expenditure burden put on a fresher or any other student by students.
- Any act of physical abuse including all variants of it: sexual abuse, homosexual assaults, and stripping, forcing obscene and lewd acts, gestures, causing bodily harm or any other danger to health or person.

## ADIMINISTRATIVE ACTION IN THE EVENT OF RAGGING:

The institution shall punish a student found guilty of ragging after following the procedure and in the manner prescribed here in under

a) Suspension from attending classes and academic privileges.

b) Withholding/ withdrawing scholarship/ fellowship and other benefits.

c) Debarring from appearing in any test/ examination or other evaluation process.

d) Withholding results.

e) Debarring from representing the institution in any regional, national or international meet, tournament, youth festival, etc.

f) Suspension/ expulsion from the hostel.

g) Cancellation of admission.

h) Rustication from the institution for period ranging from one to four semesters.

i) Expulsion from the institution and consequent debarring from admission to any other institution for a specified period.

**Library:** Late Shri Vishnuanna Patil Technical Library – This specious Library of the Institute is enriched with more than 59000 Volumes of books with more than 78 Indian, 30 International Journals, 538 online journals and Periodicals are subscribed per month. Total Nontechnical journal are 09, 1800 digital booksand 400 Videos.

## Gymkhana and N.S.S.

PVPIT has been keen in providing sufficient time and facilities for sports and gymnasium. The Gymkhana is equipped with the cardio and strength machines. The facilities for outdoor and indoor games like table-tenis, Volleyball, basketball, badminton courts as well as cricket, kho-kho and kabaddi are available. PVPIT shares the athletics track and indoor multipurpose hall with its neighboring sport complex.

The National Service Scheme (NSS) is an Indian government-sponsored flagship for public service program conducted by the Ministry of Youth Affairs and Sports of the Government of India. Popularly known as NSS, it provides opportunity to the student youth of Technical Institution, Graduate and Post Graduate at colleges and University level of India to take part in various government led community service activities and programmes. Under this program we always serve/ help community various social activities arrange by NSS. e.g. Blood Donation and Health Checkup camp, Swachh Bharat Abhiyaan and vari us social and National activities as per the directions receive from UGC and University..

## Hostel


The institute has multi storey hostel building inside the institute campus, which accommodates about 450 boys. There is separate girl's hostel where 225 girls can live comfortably with all amenities. Guest housefacility is available for visiting parents. The hostels have all necessary facilitiessuch as water purification plant, water coolers, T.V. Medical First aid center,Water heating plant, News Paper, Reading Room, Indoor games, Canteen, Mess, Laundry,Xerox Center, Public Telephone booth are available inside the campus.

## Training and Placement Office (TPO)

Placement @PVPIT Sangli: All students those who are interested for industrial placement, are groomed and prepared to face the interview process. Efforts are made by all means to provide maximum opportunities to each and every student, so that every eligible and interested student get at least one offer


### Objectives of Training and Placement

The **Training and Placement (TandP)** cell at PVPITguide and counsel every students to choose their proper career path, make them eligible and employable.
Here we groom future Technocrats as per their interest and make them industry-ready. The objective is to

- Provide opportunities for industrial placements
- Motivate them for other placement opportunities *
- Motivate them to become future entrepreneur
- Motivatethem to opt for Higher Education and research.

At PVPIT students can have their choice of placement other than job in industry. Accordingly we provide with the source of appropriate knowledge and skill which would be resourceful them. Training is given to improve their aptitude and soft skillthrough expert agencies.

We provide proper platform for *other placements like teaching as a profession, competitive exams, higher education, education abroad, jobs in government or semi government, defence services and research sector. We encourage and empower student to become an entrepreneur and provide them necessary awareness and orientation about it.

### Our Recruiters

# Engineering Mathematics – II (4 Credits)
## BTBS201

**Teaching Scheme**
Lecture: 3 hrs/ week
Tutorial: 1 hr/ week

**Evaluation Scheme**
Continuous Assessment:- 20 Marks
Mid Term Test:-20 Marks
End Semester Exam:-60 Marks

**Course Objectives:**

1. To know and discuss the need and use of complex variables to find roots, to separate complex quantities and to establish relation between circular and hyperbolic functions.
2. To understand and solve first and higher order differential equations and apply them as amathematical modeling in electric and mechanical systems.
3. To determine Fourier series representation of periodic functions over different intervals.
4. To demonstrate the concept of vector differentiation and interpret the physical and geometricalmeaning of gradient, divergence &curl in various engineering streams.
5. To know and apply the principles of vector integration to transform line integral to surface integral, surface to volume integral &vice versa using Green‟s , Stoke‟s and Gauss divergence theorems.

**Course Outcomes:**

**Students will be able to:**

1. Discuss the need and use of complex variables to find roots ,to separate complex quantities and toestablish relation between circular and hyperbolic functions.
2. Solve first and higher order differential equations and apply them as a mathematical modeling inelectric and mechanical systems.
3. Determine Fourier series representation of periodic functions over different intervals.
4. Demonstrate the concept of vector differentiation and interpret the physical and geometrical meaningof gradient, divergence &curl in various engineering streams.
5. Apply the principles of vector integration to transform line integral to surface integral , surface tovolume integral &vice versa using Green‟s , Stoke‟s and Gauss divergence theorems.

| Unit No. | Details of Content | Hrs |
|---|---|---|
| 1. | **Unit 1: Complex Numbers**<br>Definition and geometrical representation ; De-Moivre‟s theorem(without proof) ; Roots of complex numbers by using De-Moivre‟s theorem ; Circular functions of complex variable – definition ; Hyperbolic functions ; Relations between circular and hyperbolic functions ; Real and imaginary parts of circular and hyperbolic functions ; Logarithm of Complex quantities. | 7 |
| 2. | **Unit 2: Ordinary Differential Equations of First Order and First Degree and Their Applications**<br>Linear equations; Reducible to linear equations (Bernoulli‟s equation); Exact differential equations; Equations reducible to exact equations ; Applications to orthogonal trajectories , mechanical systems and electrical systems | 7 |
| 3. | **Unit 3: Linear Differential Equations with Constant Coefficients**<br>Introductory remarks - complementary function, particular integral ; Rules for finding complementary functions and particular integrals ; Method of variation of parameters ; Cauchy‟s homogeneous and Legendre‟s linear equations. | 7 |

| | | |
|---|---|---|
| **4.** | **Unit 4: Fourier Series**<br>Introductory remarks- Euler‟s formulae ; Conditions for Fourier series expansion - Dirichlet‟s conditions ; Functions having points of discontinuity ; Change of interval ; Odd and even functions expansions of odd and even periodic functions ; Half-rangeseries | **7** |
| **5.** | **Unit 5: Vector Calculus**<br>Scalar and vector fields:Gradient , divergence and curl ; Solenoidal and irrotational vector fields; Vector identities (statement without proofs) ; Green‟s lemma , Gauss‟ divergence theorem and Stokes‟theorem (without proofs) | **7** |

**Text Books**

a. Higher Engineering Mathematics by B. S. Grewal, Khanna Publishers, NewDelhi.
b. Advanced Engineering Mathematics by Erwin Kreyszig, John Wiley & Sons, NewYork.
c. A Course in Engineering Mathematics (Vol II) by Dr. B. B. Singh, Synergy Knowledge ware,Mumbai.
d. A Text Book of Applied Mathematics (Vol I & II) by P. N. Wartikar and J. N. Wartikar, Pune Vidyarthi Griha Prakashan,Pune.
e. Higher Engineering Mathematics by H. K. Das and Er. Rajnish Verma, S. Chand & CO. Pvt. Ltd., New Delhi.

**Reference Books**

a. Higher Engineering Mathematics by B. V. Ramana, Tata McGraw-Hill Publications, New Delhi.
b. A Text Book of Engineering Mathematics by Peter O‟ Neil, Thomson Asia Pte Ltd. , Singapore.
c. Advanced Engineering Mathematics by C. R. Wylie & L. C. Barrett, Tata Mcgraw-Hill Publishing Company Ltd., NewDelhi.

**General Instructions:**

1. The tutorial classes in Engineering Mathematics-II are to be conducted batchwise. Each class should be divided into three batches for thepurpose.
2. The internal assessment of the students for 20 marks will be done based on assignments, surprise tests, quizzes, innovative approach to problem solving and percentage attendance.
3. The minimum number of assignments should be eight covering alltopics.

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE**

**Summer Examination – 2023**

**Course: B. Tech.** **Branch : FE All** **Semester : II**

**Subject Code & Name: Engineering Mathematics-II (BTBS201)**

**Max Marks: 60** **Date: 12-07-2023** **Duration: 3 Hr.**

***Instructions to the Students:***

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

| | | (Level/CO) | Marks |
|---|---|---|---|
| **Q. 1** | **Solve Any Two of the following.** | | **12** |
| **A)** | If $\tan(A+iB) = x+iy$ then show that<br>i) $\tan 2A = \frac{2x}{1-x^2-y^2}$<br>ii) $\tanh 2B = \frac{2y}{1+x^2+y^2}$ | **Understand (CO1)** | **6** |
| **B)** | Show that the roots of $x^5 = 1$ are $1, \alpha, \alpha^2, \alpha^3, \alpha^4$ and hence prove that $(1-\alpha)(1-\alpha^2)(1-\alpha^3)(1-\alpha^4) = 5$ | **Understand (CO1)** | **6** |
| **C)** | Prove that $\tan\left[i\log\left(\frac{a-ib}{a+ib}\right)\right] = \frac{2ab}{a^2-b^2}$ | **Understand (CO1)** | **6** |
| **Q.2** | **Solve Any Two of the following.** | | **12** |
| **A)** | Solve $\frac{dy}{dx} + x\sin 2y = x^3\cos^2 y$ | **Understand (CO2)** | **6** |
| **B)** | Solve $y\,dx - x\,dy + \log x\,dx = 0$ | **Understand (CO2)** | **6** |
| **C)** | A constant electromotive force $E$ volts is applied to a current containing a constant resistance $R$ ohm in series and a constant inductance $L$ Henries. If the initial current is zero, show that the current builds up to half its theoretical maximum in $\left(\frac{L}{R}\log 2\right)$ seconds. | **Apply (CO2)** | **6** |
| **Q. 3** | **Solve Any Two of the following.** | | **12** |
| **A)** | Solve $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x + xe^x\cos x$ | **Understand (CO3)** | **6** |
| **B)** | Solve $(D^2+2D+1)y = e^{-x}\log x$ by method of variation of parameters | **Understand (CO3)** | **6** |
| **C)** | Solve $x^2\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} + 2y = x^2$ | **Understand (CO3)** | **6** |
| **Q.4** | **Solve Any Two of the following.** | | **12** |
| **A)** | Find the Fourier series of the function $f(x) = x$ in the interval $(0, 2\pi)$. | **Understand (CO4)** | **6** |
| **B)** | Find the Fourier series of $f(x) = x^2$ in the interval $-\pi < x < \pi$ and hence show that $\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$ | **Understand (CO4)** | **6** |

| | | | |
|---|---|---|---|
| C) | If $f(x) = \begin{cases} x & , \ 0 < x < \frac{\pi}{2} \\ \pi - x & , \ \frac{\pi}{2} < x < \pi \end{cases}$ then find half range Fourier sine series<br>Hence show that $f(x) = \frac{4}{\pi}\left(\sin x + \frac{\sin 3x}{3^2} + \frac{\sin 5x}{5^2} + \cdots\right)$ | Understand (CO4) | 6 |
| Q. 5 | **Solve Any Two of the following.** | | 12 |
| A) | If $\bar{r} = xi + yj + zk$ and $r = \lvert\bar{r}\rvert$ then Find $\nabla \cdot \bar{F}$,<br>where $\bar{F} = \left(\frac{x}{r}\right)i + \left(\frac{y}{r}\right)j + \left(\frac{z}{r}\right)k$ | Understand (CO5) | 6 |
| B) | Verify Green's theorem for $\oint_C((xy + y^2)dx + x^2dy)$ where $C$ is bounded by $y = x$ and $y = x^2$ | Understand (CO5) | 6 |
| C) | Verify the Stokes theorem for $\bar{F} = x^2i + xyj$ over the square in the plane $z = 0$ bounded by the lines $x = 0, x = a, y = 0$ and $y = a$<br>*** End *** | Apply (CO5) | 6 |

# Engineering Chemistry (4 Credit)
## BTBS202

**Teaching Scheme**
Lecture: 3hrs/week
Tutorial:1he/week

**Evaluation Scheme**
Continuous Assessment:- 20 Marks
Mid Term Test:-20 Marks
End Semester Exam:-60 Marks

**Course Objectives:**

1. To know the demonstration of knowledge of Chemistry in technical fields.
2. To bring adaptability to new developments in Engineering Chemistry and to acquire the skills required to become a perfect engineer.
3. To understand and develop the importance of water in industrial and domestic usage.
4. To identify the concepts of Chemistry to lay the ground work for subsequent studies in various engineering fields.
5. To examine a fuel and suggest alternative fuels.

**Course Outcomes: Students will be able to:**

1. To acquire and apply basic knowledge of Chemistry in technical fields.
2. Bring adaptability to new developments in Engineering Chemistry and to acquire the skills required to become a perfect engineer.
3. To integrate pure Chemistry principles and fundamentals with Engineering Applications.

| Unit No. | Details of Content | Hrs |
|---|---|---|
| 1. | **Water Treatment**<br>Introduction , Hard and Soft water, Disadvantages of hard water –In Domestic use, In Industrial use, Softening of water – Zeolite process, Ion exchange process, Hot Lime –Soda process, water characteristics- Hardness and its determination by EDTA method, Dissolved oxygen (DO) and its determination by Winkler‟s method. | 6 |
| 2. | **Phase Rule**<br>Phase Rule, statement, Explanation of the terms – Phase, Component, Degrees of freedom. One component system – Water and Sulphur. Reduced Phase rule equation, Two component alloy system- Phase diagram of Silver- Lead alloy system. | 7 |
| 3. | **Corrosion and its control**<br>Introduction, Fundamental reason of corrosion, Electrochemical Corrosion(Wet corrosion) , Direct Chemical Corrosion(Dry corrosion), Factors affecting the rate of corrosion, Types of corrosion- Galvanic, Microbiological Corrosion, Methods to minimise the rate of corrosion- Proper designing , Cathodic and Anodic protection method. | 6 |
| 4. | **Fuels and Lubricants**<br>**Fuels:** Introduction, Classification of fuel, Calorific value of a fuel, Characteristics of a good fuel, solid fuel- Coal and Various types of Coal, Analysis of coal- Proximate and Ultimate analysis, Liquid fuel- Refining of Petroleum.<br>**Lubricants** : Introduction, classification of lubricants - Solid, Semi –solid and Liquid Lubricants, Properties of lubricants: Physical properties – Viscosity, Viscosity index, surface tension, Flash point and Fire point. Chemical properties – Acidity, Saponification. | 7 |

| | | |
|---|---|---|
| **5.** | **Electrochemistry**<br>Introduction – Definition and units of Ohm‟s Law, Specific Resistance, Specific Conductance, Equivalent and Molecular Conductance. Method of conductance measurement by Wheatstone bridge method, Cell constant, Conductometric titrations, Nernst equation and its application for the calculation of half-cell potential, Glass electrode, Fuel cell (H2O2), Advantages of fuel cell, Ostwald‟s theory of acid- base indicator. | **6** |

**Text books:**


1. Jain P.C & Jain Monica, Engineering Chemistry, Dhanpat Rai & Sons, Delhi, 1992.
2. Bhal & Tuli, Text book of Physical Chemistry , S. Chand & Company, New Delhi.
3. Shikha Agarwal, Engineering Chemistry- Fundamentals and applications, Cambridge Publishers -2015


**Reference books:**


1. Barrow G.M., Physical Chemistry, McGraw-Hill Publication, New Delhi.
2. O. G. Palanna , Engineering Chemistry, Tata McGraw-Hill Publication, New Delhi.
3. WILEY, Engineering Chemistry, Wiley India, New Delhi 2014.
4. S.S.Dara, Engineering Chemistry,McGraw Hill Publication, New Delhi.

## Engineering Chemistry Laboratory
## BTBS208L

**Practical Scheme**
Lecture: 2hrs/ Batch
External Exam:-40 Marks

**Evaluation Scheme**
Continuous Assessment:- 60 Marks

| | **List of Experiments: (Perform any 10 Experiments)** |
|---|---|
| Sr. No. | **Practical** |
| 1 | Determination of Hardness of water sample by EDTA method. |
| 2 | Determination of Chloride content in water sample by precipitation titration method. |
| 3 | Determination of Dissolve Oxygen in water by Iodometric method. |
| 4 | Determination of Percent purity of Bleaching Powder. |
| 5 | pH – metric Titration (Acid Base titration) |
| 6 | Conductometric Titration (Acid Base titration) |
| 7 | Surface tension |
| 8 | Viscosity |
| 9 | To determine Acidity of water sample. |
| 10 | To determine Calorific value of a fuel. |
| 11 | Determination of Acid value of an oil sample. |
| 12 | Determination of Saponification value of an oil sample. |
| 13 | Experiment on water treatment by using Ion exchange resins. |
| 14 | To find out P-T curve diagram of steam. |
| 15 | To determine Alkalinity water sample. |
| 16. | Determination of rate of corrosion of metal. |

**Reference Books:**

1. Systematic experiments in Chemistry, A. Sethi, New Age International Publication, New Delhi.
2. Practical Inorganic Chemistry, A. I. Vogel, ELBS Pub.
3. Practical in Engineering Chemistry, S. S. Dara.

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,LONERE**

**Regular & Supplementary Winter Examination-2023**

**Course: B. Tech** **Branch: Common to All Branches** **Sem: I**

**Subject: Engineering Chemistry** **Subject code:BTBS102**

**Marks: 60** **Date:03-01-24** **Duration: 3 Hr.**

**Instructions to the Students:**

1. All the questions are compulsory.
2. Draw a neat diagram wherever necessary
3. Figures to right indicates full marks

| | | (Level /CO) | Marks |
|---|---|---|---|
| **Q.1** | **Solve Any TWO of the following.** | | |
| **A)** | Explain the determination of hardness of water by EDTA method. | 2 | 06 |
| **B)** | Discuss disadvantages of hard water in Domestic and Industrial use. | 1 | 06 |
| **C)** | Explain Ion exchange process of softening of water. | 2 | 06 |
| **Q.2** | **Solve Any TWO of the following.** | | |
| **A)** | Discuss Reduced Phase rule equation | 2 | 06 |
| **B)** | Discuss the term Phase & Degree of freedom involved in Phase Rule equation with examples. | 1 | 06 |
| **C)** | Explain the Phase diagram of one component Water system. | 2 | 06 |
| **Q.3** | **Solve Any TWO of the following.** | | |
| **A)** | Describe in brief Direct (Dry) chemical corrosion. | 1 | 06 |
| **B)** | Discuss Hydrogen evolution mechanism involved in electrochemical corrosion. | 2 | 06 |
| **C)** | Explain Cathodic protection method to minimize the rate of corrosion. | 2 | 06 |
| **Q.4** | **Solve Any TWO of the following.** | | |
| **A)** | What is Coal? Explain various types of coal. | 1 | 06 |
| **B)** | Write a note on: Refining of Petroleum. | 2 | 06 |
| **C)** | Describe any three physical properties of lubricant. | 2 | 06 |
| **Q.5** | **Solve Any TWO of the following.** | | |
| **A)** | Write a note on : Glass electrode | 2 | 06 |
| **B)** | Describe Ostwald's theory of Acid-Base indicator. | 1 | 06 |
| **C)** | Describe Conductometric titration with any two examples. | 2 | 06 |

## Engineering Mechanics (3 Credits)
## BTES203

**Teaching Scheme**
Lecture: 2hrs/week
Tutorial:1hr/week

**Evaluation Scheme**
Continuous Assessment:- 20 Marks
Mid Term Test:-20 Marks
End Semester Exam:-60 Marks

**Course Objectives:**

1. To know and apply fundamental Laws of Engineering Mechanics
2. To know and apply Conditions of static equilibrium to analyze given force system
3. To compute Centre of gravity and Moment of Inertia of plane surfaces
4. To compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion
5. To know and discuss relation between force and motion characteristics

**Course Outcomes: Students will be able to:**

1. Apply the fundamental Laws of Engineering Mechanics.
2. Apply Conditions of static equilibrium to analyze given force system
3. Compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion also Know and discuss relation between force and motion characteristics.

| Unit No. | Details of Content | Hrs |
|---|---|---|
| 1 | **Basic Concepts** Objectives of Engineering Analysis and Design, Idealization of Engineering Problems, Simplification of real 3D problems to 2-D and 1-D domain,Basis of Assumptions, types of supports, types of load, free body diagram, Laws of Motion, Fundamental principles, Resolution and composition of a forces, Resultant, couple, moment, Varignon‟s theorem, force systems, Centroid of composite shapes, moment of inertia of planer sectionsand radius of gyration | 7 |
| 2 | **Module2: Equilibrium** Static equilibrium, analytical and graphical conditions of equilibrium, Lami‟s theorem, equilibrium of coplanar concurrent forces, coplanar non concurrent forces, parallel forces,beams reactionsSimple trusses (plane and space), method of joints for plane trusses, method of sections for plane trusses Friction:Coulomb law, friction angles, wedge friction, sliding friction and rolling resistance | 7 |
| 3 | **Module3:Kinematics** : Types of motions, kinematics of particles, rectilinear motion, constant and variable acceleration, relative motion, motion under gravity, study of motion diagrams, angular motion, tangential and radial acceleration, projectile motion, kinematics of rigid bodies, concept of instantaneous center of rotation, concept of relativevelocity, | 7 |
| 4 | **Module4:Kinetics** : Mass moment of inertia, kinetics of particle, D'Alembert‟s principle:applications in linear motion, kinetics of rigid bodies, applications in translation, applications in fixed axisrotation | 6 |

| | | |
|---|---|---|
| **5** | **Module5: Work, Power, Energy**<br>Principle of virtual work, virtual displacements for particle and rigid bodies, work done by a force, spring, potential energy, kinetic energy of linear motion and rotation, work energyequation, conservation of energy, power, impulse momentum principle, collision of elasticbodies. | **6** |

**Text Books**


1. S. Timoshenko, D. H. Young, “Engineering Mechanics”, McGraw Hill, 1995.
2. Tayal A. K., “Engineering Mechanics”, Umesh Publications, 2010.
3. Bhavikatti S. S., Rajashekarappa K. G., “Engineering Mechanics”, New Age International Publications,2nd Edition.
4. Beer, Johnston, “Vector Mechanics for Engineers”, Vol. 1: Statics and Vol. 2: Dynamics, McGraw Hill Company Publication, 7th edition, 1995.
5. Irving H. Shames, “Engineering Mechanics - Statics and Dynamics”, Pearson Educations, Fourth edition, 2003.
6. McLean, Nelson, “Engineering Mechanics”, Schaum’s outline series, McGraw Hill Book Company, N.Delhi, Publication.
7. Singer F. L., “Engineering Mechanics - Statics and Dynamics”, Harper and Row Pub. York.
8. Khurmi R. S., “Engineering Mechanics”, S. Chand Publications, N. Delhi

| Engineering Mechanics Laboratory<br>BTES209L | |
|---|---|
| **Practical Scheme**<br>Lecture: 2hrs/ Batch<br>External Exam:-40 Marks | **Evaluation Scheme**<br>Continuous Assessment:- 60 Marks |
| Sr. No. | Students are expected to satisfactorily complete any ten experiments listed below.<br>**List of Practical's/Experiments/Assignments** |
| 1 | Polygon law of coplanar forces. |
| 2 | Bell crank lever. |
| 3 | Support reaction for beam. |
| 4 | Problems on beam reaction by graphics statics method |
| 5 | Simple / compound pendulum. |
| 6 | Inclined plane (to determine coefficient of friction). |
| 7 | Collision of elastic bodies (Law of conservation of momentum). |
| 8 | Moment of Inertia of fly wheel. |
| 9 | Verification of law of Machine using Screw jack |
| 10 | Assignment based on graphics statics solutions |
| 11 | Any other innovative experiment relevant to Engineering Mechanics |
| 12 | Centroid of irregular shaped bodies. |
| 13 | Verification of law of Machine using Worm and Worm Wheel |
| 14 | Verification of law of Machine using Single and Double Gear Crab.. |
| 15 | Application of Spreadsheet Program for conceptslike law of moments, beam reactions, problems in kinematics, etc |

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination-2023

Course: B. Tech. Branch: All Branches Semester : I

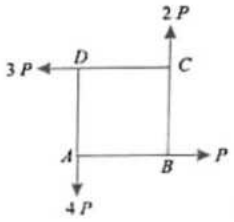
Subject Code & Name: BTES103 Engineering Mechanics

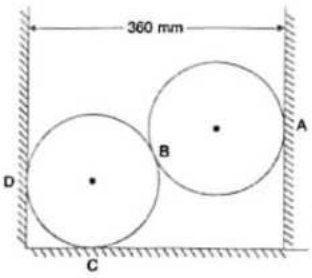
Max Marks: 60 Date:05-01-24 Duration: 3 Hr.

*Instructions to the Students:*

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

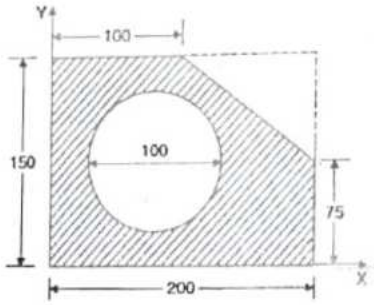
| | | (Level/CO) | Marks |
|---|---|---|---|
| **Q. 1** | **Solve Any Two of the following.** | | **12** |
| **A)** | Explain following with Diagram: | **Remember** | **6** |
| | a) Equilibrium of Bodies | | |
| | b) Free Body Diagram | | |
| | c) Lami's Theorem | | |
| **B)** | Four forces equal to P, 2P, 3P and 4P are respectively acting along the four sides of square ABCD taken in order. Find the magnitude, direction, and position of the resultant force. | **CO 1** | **6** |
| **C)** | Two smooth spheres each of radius 100 mm and weighing 100 N, rest in a horizontal channel having vertical walls, the distance between which is 360 mm. Find the reactions at the points of contact A, B, C and D as shown in figure. | **CO 2** | **6** |
| **Q.2** | **Solve Any Two of the following.** | | **12** |
| **A)** | State Laws of Friction. | **Remember** | **6** |



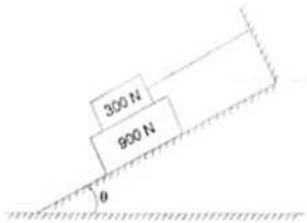
B) Determine the coordinates $X_c$, and $Y_c$ of the centre of a 100 mm diameter circular hole cut in a thin plate so that this point will be the centroid of the remaining shaded area shown in figure (All dimensions are in mm).

CO 3 6



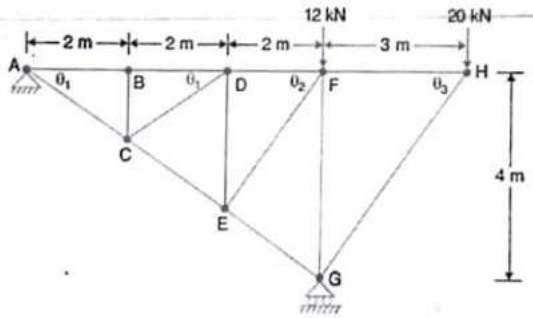

C) What should be the value of θ in Figure that will make the motion of 900 N block down the plane to impend? The coefficient of friction for all contact surfaces is 1/3.

CO 2 6

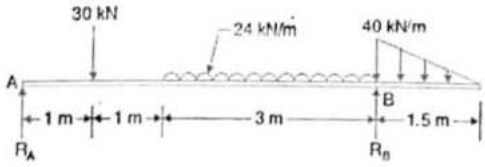



**Q. 3 Solve Any Two of the following.** 12

A) Find the forces in all the members of the truss shown in figure. **CO 2** 6




B) Determine the reactions at supports A and B of the overhanging beam shown in figure. **CO 2** 6




C) State and Prove Varignon's Theorem. **Remember** 6

**Q.4 Solve Any Two of the following.** 12

A) Prove equations of motion of a body moving with constant acceleration. **Remember** 6

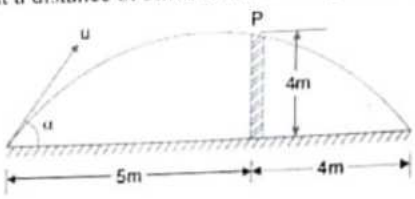
B) A small steel ball is shot vertically upwards from the top of a building 25 m above the ground with an initial velocity of 18 m/sec. CO 4 6

a) In what time, it will reach the maximum height?

b) How high above the building will the ball rise?

c) Compute the velocity with which it will strike the ground and the total time it is in motion.

C) Find the least initial velocity with which a projectile is to be projected so that it clears a wall 4 m heigh located at a distance of 5m and strikes the ground at a distance 4 m beyond the wall as shown in figure. The point of projection is at the same level as the foot of the wall. CO 4 6




12

**Q. 5 Solve Any Two of the following.**

A) The angular acceleration of a flywheel is given by $\alpha = 12 - t$, where, $\alpha$ is in rad/sec2 and t is in seconds. If the angular velocity of the flywheel is 60 rad/sec at the end of 4 seconds, determine the angular velocity at the end of 6 seconds. How many revolutions take place in these 6 seconds? CO 4 6

B) Direct central impact occurs between a 300 N body moving to the right with a velocity of 6 m/sec and 150 N body moving to the left with a velocity of 10 m/sec. Find the velocity of each body after impact if the coefficient of restitution is 0.8. CO 5 6

C) Define following along with proper figure. Remember 6

a) Direct Impact

b) Oblique Impact

c) Eccentric Impact

*** End ***

## Computer Programming in C (2 Credits)
## BTES204

**Teaching Scheme**
Lecture: 2 hrs/ week

**Evaluation Scheme**
Continuous Assessment:- 20 Marks
Mid Term Test:-20 Marks
End Semester Exam:-60 Marks

**Course Objectives:**

1. To give a broad perspective about the uses of computers in engineering industry and C Programming.
2. To develop the basic concept of algorithm, algorithmic thinking and flowchart.
3. To apply the use of C programming language to implement various algorithms and develops the basic concepts and terminology of programming in general.
4. To make familiar the more advanced features of the C language.
5. To identify tasks in which the numerical techniques learned are applicable and apply them to write programs and hence use computers effectively to solve the task.

**Course Outcomes: Students will be able to:**

1. Understand C programming environment.
2. Understand problem solving skills or techniques.
3. Apply logic to solve various problem statements.

| Unit No. | Details of Content | Hrs |
|---|---|---|
| 1. | **Process of programming:** Editing, Compiling, Error Checking, executing, testing and debugging of programs. IDE commands. Eclipse for C Program development, Flowcharts, Algorithms | 4 |
| 2. | **Types, Operators and Expressions:** Variablenames, Data types, sizes, constants, declarations, arithmetic operators, relational and logical operators, type conversions, increment and decrement operators, bitwise operators, assignment operators and expressions, conditional expressions precedence and orderofevaluation. | 4 |
| 3. | **Control Flow:** Statements and Blocks. If-else, else-if switch Loops while and for, do-while break and continue goto and Labels. Functions and Program Structure: Basic of functions, functions returning non- integers external variablesscoperules. | 4 |
| 4. | **Arrays in C:** Initializing arrays, Initializing character arrays, multidimensional arrays. | 4 |
| 5. | **Structures C:** Basics of structures, structures and functions arrays of structures, **Pointer in C**. Pointers to integers, characters, floats, arrays, structures | 4 |
| | ***Special Note: Topic of Pointers in C is only for lab exercises and not for end semester examinations.*** | |

**Reference/Text Books:**


1. Brain W. Kernighan and Dennis Ritchie, The C Programming Language, Prentice Hall, 2 ndEdition, 1988.
2. R. S. Bichkar, Programming with C, Orient Blackswan, 1 st Edition, 2012.
3. Herbert Schildit, C the Complete Reference, McGraw-Hill Publication, 2000.
4. Balguruswamy, Programming in C, PHI.
5. YashwantKanitkar, Let Us C, PHI


## Computer Programming in C: Laboratory
## BTES207L

**Practical Scheme**
***Practical*** : 2hrs/ Batch
External Exam:-40 Marks

**Evaluation Scheme**
Continuous Assessment:- 60 Marks

| List of Practical | |
|---|---|
| 1 | Assignment on Flow Chart. |
| 2 | A Simple program to display a message “Hello world” on screen. |
| 3 | A Program to take input from user and display value entered by user on screen. |
| 4 | Basic example for performing different C Operations using operator. (With and without using scanf()). |
| 5 | Basic Program on Operator. (Using scanf()). |
| a) | Program to find and print area, perimeter and volume of geometric objects. |
| b) | Program to check a number entered by user is Perfect number or not. |
| 6 | Program to find maximum and minimum between two numbers given by user using if-else and conditional Operators. |
| 7 | Program to swap two numbers. |
| 8 | Program to print square and factorial of an entered number using while loop. |
| 9 | Program to check a number is Palindrome number or not. |
| 10 | Program to check Armstrong number. |
| 11 | Program to check and generate prime numbers up to n. |
| 12 | Program to find GCD of two entered numbers. |
| 13 | Program to find maximum and minimum from n entered numbers. |
| 14 | Program to print alternate numbers from n entered numbers. |
| 15 | Program to search an element in an Array using linear and binary search. |
| 16 | Program to print entered numbers in ascending order using sorting. |
| 17 | Program to print addition, subtraction and multiplication of Matrices. |
| 18 | Program to find length of string. (With and without using library function). |
| 19 | Programs demonstrating use of Structures, Arrays of Structures and Structure containing arrays. |
| 20 | Programs demonstrating use of pointers to integers, floats, char, strings, structures and arrays. |

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination-2023

**Course: B. Tech.** **Semester : I**

**Subject Code & Name: Computer Programming in C [BTES104]**

**Max Marks: 60** **Date:08-01-24** **Duration: 3 Hr.**

***Instructions to the Students:***

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

| | | (Level/CO) | Marks |
|---|---|---|---|
| **Q. 1** | **Solve Any Two of the following.** | | 12 |
| A) | Explain in detail Arithmetic, Relational and Logical operators in C. | CO1 | 6 |
| B) | What is difference between high level language and low level language explain with example | CO1 | 6 |
| C) | What are types of errors in C. Explain in details with suitable example | CO1 | 6 |
| **Q.2** | **Solve Any Two of the following.** | | 12 |
| A) | Define Keywords? What are the rules to declare Keyword? Can we declare keyword as a variable name. | CO2 | 6 |
| B) | Write a program to print following pattern<br>`*`<br>`* *`<br>`* * *`<br>`* * * *`<br>`* * * * *` | CO2 | 6 |
| C) | What is difference between while loop and do while loop C Program to demonstrate the do...while loop behavior when the condition is false from the start | CO2 | 6 |
| **Q. 3** | **Solve Any Two of the following.** | | 12 |
| A) | Write a C program to Demonstrate returning of day based numeric value | CO3 | 6 |
| B) | Write a program to perform Multiplication of two 3x2 matrices if matrix elements are entered by user. | CO3 | 6 |
| C) | Write a program and draw a flowchart to check given number is even or odd | CO3 | 6 |
| **Q.4** | **Solve Any Two of the following.** | | 12 |
| A) | What do you mean by function? Give the proper syntax to define,declare and call | CO4 | 6 |

function.

| | | | |
|---|---|---|---|
| B) | Write a program to calculate factorial of a number using function. | CO4 | 6 |
| C) | Explain following c string functions.write a program to illustrate the following functions<br>1.Strlen<br>2.Strcpy<br>2.Strcat | CO4 | 6 |

**Q. 5 Solve Any Two of the following.** 12

| | | | |
|---|---|---|---|
| A) | What is difference between array and Structure? Explain with suitable example and syntax. | CO5 | 6 |
| B) | Write a program to enter Student details such as Name, Department, PRN using structure. | CO5 | 6 |
| C) | Write a program to enter and print data of three books which contain. its Name, Author and Publisher type of book using structure. | CO6 | 6 |

***** End *****

## Basic Electrical and Electronics Engineering (Audit)
## BTES206

**Teaching Scheme** Lecture: 2hrs/week

**Evaluation Scheme** Continuous Assessment:- 50 Marks

**Course Objectives:**

1. To know and apply basic ideas and principles of electrical engineering.
2. To Identify protection equipment and energy storage devices.
3. To differentiate electrical and electronics domains and explain the operation of diodes and transistors.
4. To acquire knowledge of digital electronics
5. To design simple combinational and sequential logic circuits.

**Course Outcomes: Students will be able to:**

1. Define basic concepts of electrical engineering.
2. Explain devices used for energy storage and protection of electrical system.
3. Relate electrical and electronics domains and Define the operation of diodes and transistors.
4. Explain digital electronics. Illustrate simple combinational and sequential logic circuits.

| Unit No. | Details of Content | Hrs |
|---|---|---|
| 1 | **Elementary Electrical Concepts:** Fundamental of Electrical system Potential difference, Ohm's law, Effect of temperature on resister, resistance temperature coefficient, Electrical wiring system: Study of different wire gauges and their applications in domestic and industry. Energy Resources and Utilization: Conventional and nonconventional energy resources; Introduction to electrical energy generation from different resources, transmission, distribution and utilization,Advantages & Disadvantages of AC & DC transmission. Concept of Supply Demand, Power Factor, Need of unityfactor. | 4 |
| 2 | **Measurement of Electrical Quantities:** Measurement of Voltage, Current, and Power; Measurement of 3 phase power; Study of Energy meters. Study of Electrical Storage devices: Batteries such as Nickel-cadmium (NiCd), Lithium- ion (Li-ion), Lithium Polymer (Li-pol.) batteries. Study of circuit breakers & Actuators (MCB & MPCB, Power Contactors & Aux contactors, Electro- Mechanical & Solid state Relays) | 4 |
| 3 | **Diodes and Circuits**: The P-N Junction Diode, V-I characteristics, Diode as Rectifier, specifications of Rectifier Diodes, Half Wave, Full wave, Bridge rectifiers, Equations for IDCVDC VRMS, IRMS, Efficiency and Ripple Factor for each configuration. Filters: Capacitor Filter, Choke Input Filter, Capacitor InputFilter(Π Filter), Zener Diode, Characteristics, Specifications, Zener Voltage Regulator, Types of Diodes: LED,Photodiode | 4 |

| | | |
|---|---|---|
| **4** | **Semiconductor Devices and Applications:**<br>Transistors: Introduction, Classification, CE, CB, and CC configurations, α, β, concept of gain and bandwidth. Operation of BJT in cut-off, saturation and active regions (DC analysis). BJT as an amplifier, biasing techniques of BJT, BJT as a switch.<br>Introduction to Digital Electronics: Number System, Basic logic Gates, Universal Gates, Boolean Postulates, De-Morgan Theorems | **4** |

**Reference/Text Books:**


1. V. N. Mittal and Arvind Mittal, Basic Electrical Engineering, McGraw-Hill Publication.
2. BrijeshIyer and S. L. Nalbalwar, A Text book of Basic Electronics, Synergy Knowledgeware Mumbai, 2017. ISBN:978-93-8335-246-3
3. Vincent DelToro, Electrical engineering Fundamentals, PHI Publication, 2nd Edition, 2011.
4. Boylstad, Electronics Devices and Circuits Theory, Pearson Education.
5. Edward Hughes, Electrical Technology, Pearson Education.
6. D. P. Kothari and Nagrath, Theory and Problems in Electrical Engineering, PHI Publication, 2011.
7. B. L. Theraja, Basic Electronics, S. Chand Limited, 2007.
8. MillmanHalkias, Integrated Electronics-Analog and Digital Circuits and Systems, McGraw-Hill Publication, 2000.
9. Donald Neaman, Electronic Circuit Analysis and Design, McGraw-Hill Publication, 3rdEdition.
10. Donald Neaman, Electronic Circuit Analysis and Design, McGraw-Hill Publication, 3rd Edition.
11. Printed Circuit Boards Design and Technology, Walter C. Bosshart, McGraw-Hill Publication.


Note: Students are advised to use internet resources whenever required

## Workshop Practices
## BTES205

**Practical Scheme**
Lecture: 4hrs/Batch

**Evaluation Scheme**
Continuous Assessment:- 60 Marks
External Exam:- 40 Marks

**Instructions to the student:**
Each student is required to maintain a „workshop diary" consisting of drawing / sketches of the jobsand a brief description of tools, equipment, and procedure used for doing the job.

| Sr. No. | List of Practical: |
|---|---|
| 1. | Wood sizing exercises in planning, marking, sawing, chiseling and grooving to make half lap joint and cross lap joint. |
| 2. | A job involving cutting, filing to saw cut, filing all sides and faces, corner rounding, drilling and tapping on M. S. plates. |
| 3. | A job on use of plumbing tools and preparation of plumbing line involving fixing of water tap and use of elbow, tee, union and coupling, etc. |
| 4. | Making a small parts using GI sheet involving development, marking, cutting, bending, brazing andsoldering operations- i)Tray ii) Funnel and similar articles. |
| 5 | Exercise in Arc welding (MMAW) to make a square butt joint. |
| 6. | Exercise in Resistance (Spot) welding to make a lap joint. |
| 7. | A job using power operated tools related to sheet metal work, Welding, Fitting, Plumbing, Carpentry and pattern making. |
| 8. | A job on turning of a Mild Steel cylindrical job using center lathe. |
| | **Contents:** |
| a) | **Carpentry:** Technical Terms related to wood working, Types of wood, Joining materials, Types of joints - Mortise and Tenon, Dovetail, Half Lap, etc., Methods of preparation and applications, Wood working lathe, safety precautions. |
| b) | **Welding:** Arc welding - welding joints, edge preparation, welding tools and equipment, Gas welding -types of flames, tools and equipment, Resistance welding - Spot welding, joint preparation, tools and equipment, safety precautions. |
| c) | **Fitting and Plumbing:** Fitting operation like chipping, filing, right angle, marking, drilling, tapping etc., Fitting hand tools like vices, cold chisel, etc. Drilling machine and its operation, Different types of pipes, joints, taps, fixtures and accessories used in plumbing, safety precautions. |
| d) | **Sheet Metal Work:** Simple development and cutting, bending, Beading, Flanging, Lancing and shearing of sheet metal, Sheet metal machines - Bending Machine, Guillotine shear, Sheet metal joints, Fluxes and their use. |
| e) | **Machine shop**: Lathe machine, types of lathes, major parts, cutting tool, turning operations, safety precautions |

**Reference/ Text Books:**

1. K. C. John, Mechanical Workshop Practice, Prentice Hall Publication, New Delhi, 2010.
2. Hazra and Chaudhary, Workshop Technology-I, Media promoters and Publisher private limited

## 1) CREDIT SYSTEM AND MODE OF EVALUATION

All the courses in the University and affiliated colleges shall be credit based and the evaluation will be grade based. Credit based grading system is a systematic way of describing an educational programme by attaching credits to its components. The definition of credits may be based on different parameters, such as student workload, learning outcomes and contact hours. It is a student-centric system based on the student workload required to achieve the objectives of a programme. It should facilitate academic recognition of the courses and mobility of the students. Credits assignment is based on the principle that Credits can only be obtained after successful completion of the work required and appropriate assessment of the learning outcomes achieved. Student workload consists of the time required to complete all prescribed learning activities such as attendance at lectures/practical, seminars, projects, etc. Credits are allocated to all the educational components of a study programme and indicate the quantity of work each component requires to achieve its specific objectives. Evaluation is an important component of any teaching-learning process. The University gives emphasis on continuous evaluation with considerable freedom to the teacher in deciding the mode of evaluation of the students. The performance of the student is documented by a grade at the end of the semester. The grading scale ranks the students on a statistical basis. Therefore, statistical data on student performance in his/her class is a prerequisite for applying the grading system.

## 2. Course Credits

In general, a certain quantum of work measured in terms of credits is laid down as the requirement for a particular degree. The student acquires credits by passing courses every semester, the amount of credits associated with a course being dependent upon the number of hours of instruction per week in that course. There are mainly two types of courses in the University - lecture courses and laboratory courses. Lecture courses consist of lecture (L) and tutorial (T) hours. Laboratory courses consist of practical (P) hours. As per the AICTE norms, the credit (C) for a course is dependent on the number of hours of instruction per week in that course, as given below: (1) 1h/week of lecture (L) or tutorial (T) = 1 credit (2) 2h/week of Practical's (P) = 1 credit (3) Credit (C) for a theory course = No. of hours of lectures per week + No. of hours of tutorials per week = L + T (4) Credits (C) for a Laboratory course = ½ x No. of hours of laboratory course per week Credits will be assigned

to Industrial Training, Seminar, Projects and other mandatory course requirements also and these will be mentioned in the respective syllabi. There may be some non-credit requirements. A student is required to earn credits as mentioned in the syllabus.

**3. Evaluation**

The weightages of different modes of assessments shall be as under.

| **In-Semester evaluation** | | | | |
|---|---|---|---|---|
| | **Continuous mode(CA)** | **Mid Semester Exam** | **EndSemesterExam** | **Components of continuous mode** |
| Theory | 20% | 20% | 60% | Quizzes, class tests (open or closed book but minimum 2 in the semester if only mode of CA), home assignments, group assignments, viva-voce discussions |
| Practical's | 60% | - | 40% | Attendance, completion of experiments viva -voce, journal submission, assignments, project, experiments, announced test |

**4) In-Semester Evaluation**

a) It is expected that the teacher would conduct at least two formal assessments of the students under the continuous assessment mode in a Semester

b) The teacher will announce at the beginning of the respective course the method of conducting the assessments under the continuous mode and the assignment of marks and inform the same to the Director- Academics or Dean in University or Principal/HoD in affiliated college in the first week of the semester. The same may be also displayed on the University/ College Portal.

c) The teacher shall keep the record of the continuous assessment of a class at least for three years and produce it to the Principal of the college or Director-Academics, if needed.

d) In-semester performance of all students, both continuous assessment and midsemester examination should be displayed on notice board as well on College / University Portal and sent to the academic office of the University/ College by the teacher before the end-semester examination. e) For the theory courses, there will be one Mid-semester test for

each course to be held as per the schedule fixed in the Academic Calendar of the University/college, preferably in the eighth week of the semester

e) A candidate who has not appeared for the in-semester continuous tests and/or midterm examination in one or more subjects shall be considered to have not completed the course and will have to re-register for the respective subjects/course in the following year.

**5) End-Semester examination**

The semester end examination will cover the full syllabus of the course and will be conducted as per the University time table at the end of each semester.

**Pass and Fail**

(Revised as per the Item 8 of the Minutes of the Academic Council Meeting held on 19th August 2017)

(a) The candidates who obtain 40% and more marks in a subject head of the end semester examination AND 40% or more of the total marks of a subject head shall be deemed to have passed the respective subject head.

(b) The candidates who obtain less than 40% of marks in a subject head of the end semester examination and less than 40% the total marks of a subject head shall be deemed to have failed in the respective subject head (Grade FF).

**Grades**

(a) The performance of a student shall be documented by a Letter grade. Each letter grade has a Grade point associated with it. The Grades and Grade points shall be assigned to each head of passing and both will be indicated in the mark-list of the semester examination.

(b) A teacher shall assign absolute marks to all the in-semester tests and the end-semester tests for the respective subject head. The teacher shall collate the marks in the midsemester and continuous mode examinations convert them to prescribed 20% and 20% mark, respectively and submit the same to the office.

(c) The total marks (continuous assessment + mid-semester + end-semester) of a candidate in a subject head are converted into a letter grade, based on the relative performance of the student in the class taking examination in the subject. The performance of the students who have passed the said subject shall be considered for the allotment of the relative grade on statistical basis.

| Letter Grade | Grade Point |
|---|---|
| EX | 10 |
| AA | 9.5 |
| AB | 9 |
| BB | 8.5 |
| BC | 8.0 |
| CC | 7.5 |
| CD | 7 |
| DD | 6.5 |
| DE | 6.0 |
| EE | 5 |

(d) The grades to be allotted in the case of students who fail or do not appear at the end semester examination shall be as under.

| Letter Grade | Grade Point | Explanation |
|---|---|---|
| FF | 0 | The candidate fails in subject head. The candidate will be allowed to take end-semester repeat or subsequent examinations as per rule |
| XX | 0 | (i) The candidate has not kept term for the subject head due to attendance less than requisite 75%. (ii) The in-semester performance of the candidate is very poor. Further see 7.3.5(g) In the above cases, the candidate has to repeat the respective course by paying the fees in the following year |
| I | 0 | The candidate has kept term for the subject head, has taken all the internal examinations with satisfactory performance, but has failed to take the end-semester examination due to genuine reasons. The candidate will be allowed to take subsequent examinations as per rule |
| FR | 0 | The candidate has exhausted all the permissible chances to clear the end-semester examinations. The candidate has to register for the respective semester again for all the subject heads or will be out of the respective degree course as per the rules |

| | | |
|---|---|---|
| DR | 0 | (i) The candidate hasn't participated in academic programme. (ii) The candidate has taken a drop for the subject head;- provided he/she intimates the same (i or ii) at least 7 days in advance of the commencement of the end-semester examination for the respective year. |

(e) Grades FF and I are place-holders only and do not enter into CGPI/SGPI calculations directly. These grades get converted to one of the regular grades after the end-semester examination.

(f) A candidate with an FR grade has appeared for maximum number of permissible six end semester examinations and has to re-register for that course by paying the appropriate fees.

(g) I grade will not be continued beyond the permissible number of six consecutive end semester examinations, irrespective of whether the candidate fails to take any of these exams.

(h) 'XX' Grade: The grade XX in a course is awarded if – (i) a candidate does not maintain the minimum 75% attendance in the Lecture/Tutorial/Practical classes, (ii) the student has bad or incomplete in-semester records, for example, a candidate missing all internal tests and mid-semester examination, etc., (iii) a candidate indulges in a misconduct/uses unfair means in the examination, assignments, etc., of a nature serious enough to invite disciplinary action in the opinion of the teacher. (Note: Award of the XX grade in the case of g(iii) above shall be done by Disciplinary Action Committee (DAC)).

(i) The names/roll numbers of students to be awarded the XX grade should be communicated by the teacher to the Academic office as per academic calendar before the last date of submission of the application for end-semester examination

**Awarding the grades**

(1) The grading scale ranks the students on a statistical basis on the basis of the overall performance of the students of a given class in the given subject head. Therefore, statistical data on students' performance is a prerequisite for applying the grading system. While assigning grades in a given subject head, it is essential to know the average marks (AM) obtained by the students who have passed the subject head and the highest marks (HM) obtained in the same subject head.

(a) EX Grade shall be awarded to the candidate(s) who scored highest mark (HM) in the concerned subject head provided the marks obtained are 80% or higher in the given subject head.

(b) If the average marks (AM) obtained by the students who have passed the subject head is such that $60\% \leq AM < 70\%$, the interval AM shall be awarded grade CC and the other grades shall be decided as follows:

(c) AA, AB, BB grades shall be decided between the AM and HM by dividing the range in equal intervals.

(d) CC, CD, DD, DE and EE grades shall be decided between the AM and minimum marks required for passing the head (i.e. 40%) by dividing the range in equal intervals.

(2) If the average marks (AM) obtained by the students who have passed the subject head is $\geq 70\%$, the interval AM shall be awarded grade BB and the other grades shall be decided as follows:

(a) AA, AB and BB grades shall be decided between the AM and HM by dividing the range in equal intervals.

(b) BC CC, CD, DD, DE and EE grades shall be decided between the AM and minimum marks required for passing the head (i.e. 40%) by dividing the range in equal intervals

(3) Illustration of award of different grades are explained in the following examples:

i) Example 1: HM = 92, AM = 76

Hence, IL = (76-40)/6 = 6, IU = (92-76)/3 = 5.33 ≈ 5

ii) Example 2: HM = 84, AM = 62

Hence, IL = (62-40)/5 = 4.4 ≈ 4, IU = (84-62)/4 = 5.5 ≈ 6

Marks distribution for different grades

| Sr. No. | Letter Grade | Example 1 (HM=92, AM= 76, IL = 6, IU = 5 | Example 2 (HM=84, AM= 62, IL = 4, IU = 6 |
|---|---|---|---|
| 1 | EE | 40 to 45 | 40 to 43 |
| 2 | DE | 46 to51 | 44to45 |
| 3 | DD | 52 to 57 | 48to 50 |
| 4 | CD | 58 to 63 | 52 to 55 |
| 5 | CC | 64to 69 | 56to 62 |
| 6 | BC | 70 to 76 | 63 to 68 |
| 7 | BB | 77 to 81 | 69 to 74 |
| 8 | AB | 82 to 86 | 75 to 80 |
| 9 | AA | 87 to 91 | 81 to 83 |
| 10 | EX | 92 | 84 |

## 6. Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)

### (a) Semester Grade Point Average (SGPA)

The performance of a student in a semester is indicated by Semester Grade Point Average (SGPA) which is a weighted average of the grade points obtained in all the courses

taken by the student in the semester and scaled to a maximum of 10. (SGPI is to be calculated upto two decimal places). A Semester Grade Point Average (SGPA) will be computed for each semester as follows:

$$SGPA=\frac{(\Sigma_{i=1}^{n} c1g1)}{(\Sigma_{i=1}^{n} c1)}$$

Where

'n' is the number of subjects for the semester,

'ci' is the number of credits allotted to a particular subject, and

'gi' is the grade-points awarded to the student for the subject based on his performance as per the above table.

SGPA will be rounded off to the second place of decimal and recorded as such.

**(b) Cumulative Grade Point Average (CGPA):**

An up to date assessment of the overall performance of a student from the time he entered the Institute is obtained by calculating Cumulative Grade Point Average (CGPA) of a student. The CGPA is weighted average of the grade points obtained in all the courses registered by the student since s/he entered the Institute. CGPA is also calculated at the end of every semester (up to two decimal places). Starting from the first semester at the end of each semester (S), a Cumulative Grade Point Average (CGPA) will be computed as follows:

$$CGPA=\frac{(\Sigma_{i=1}^{m} c1g1)}{(\Sigma_{i=1}^{m} c1)}$$

Where,

'm' is the total number of subjects from the first semester onwards up to and including the semester S
'ci' is the number of credits allotted to a particular subject, and
'gi' is the grade-points awarded to the student for the subject based on his/her performance as per the above table.

CGPA will be rounded off to the second place of decimal and recorded as such.

**(c)** The CGPA, SGPA and the grades obtained in all the subjects in a semester will be communicated to every student at the end of every semester/ beginning of the next semester.

**(d)** When a student gets the grade 'FF', or I' in any subject head during a semester, the SGPA and CGPA from that semester onwards will be tentatively calculated, taking only 'zero' grade point for each such 'FF' or 'I' grade. When the 'FF' grade(s) has/ have been substituted by better grades after the repeat examination or subsequent semester examination, the SGPA and CGPA will be recomputed and recorded.

**7. Supplementary End-Semester Examination**

(Revised as per the item 7 of Minutes of the Academic Council meeting held on 19th August 2017)

(1) For those candidates who fail in a subject head or are eligible for appearing at the repeat examination, A Supplementary End-Semester Examination of odd semester will be conducted before the regular End semester examination of the even semester.
(2) A Supplementary End-Semester Examination of even semester will be conducted before the regular End semester examination of the odd semester.
(3) The marks obtained by candidates in the in-semester examinations (continuous assessment and mid-term examination) will be carried forward in such cases.
(4) Grading the performance in the Supplementary Examination: The grades will be assigned as per 3.5 and 3.6 above
(5) Revaluation of end-semester and Supplementary examination: Candidate's performance in these examinations will be announced on web portal of the University and after one month of such announcement the grade statements will be sent to the concerned Department for distribution to the students. Those who want to get the photocopy of their answer books are required to pay the requisite fee. Revaluation of these examinations shall be allowed. Those who would like to have the revaluation of their answer books are required to pay a requisite fee.
(6) Remedial examination the candidate will have an option of appearing for an Online Remedial Examination, after the declaration of each End-semester examination results, to pass the subject head where he/she has failed in regular end-semester examination of the semester. The candidate will get only EE grade if he clears the remedial examination and can continue with the next semester. However, for improving his grade in the same subject head, the candidate will have an option of appearing in the 'same' subject in the Supplementary Examination before the regular end-Semester examination.

**8. Passing of a Semester Examination**

A candidate shall be declared as 'PASSED' any semester examination if he/she has

(a) Cleared all heads of passing by securing grades EE or higher in all the heads;
(b) Passed all the heads of passing such as project, seminar, training, etc as per the rules;
(c) Satisfactorily completed all the mandatory requirements of the course;
(d) paid all the University/college dues;
(e) No case of indiscipline pending against him/her.

**9. Eligibility for the Award of a Degree**

A candidate shall be declared eligible for the award of a degree, if he/she has cleared all the semester examinations as given in (6) above.

**10. Award of Degree of Honors'**

**Major Degree**

The concept of Major and Minors at B.Tech level is introduced , to enhance learning skills of students, acquisition of additional knowledge in domains other than the discipline being pursued by the student, to make the students better employable with additional knowledge and encourage students to pursue cross-discipline research.

**A. Eligibility Criteria for Majors**

i. The Student should have Minimum CGPA of 7.5 up to 4th Semester
ii. Student willing to opt for majors has to register at the beginning of 5th Semester
iii. The Student has to complete 5 additional advanced courses from the same discipline specified in the curriculum. These five courses should be of 4 credits each amounting to 20 credits. The students should complete these credits before the end of last semester.
iv. Student may opt for the courses from NPTEL/ SWAYAM platform. (if the credits of NPTEL/ SWAYAM courses do not match with the existing subject proper scaling will be done).

Student complying with these criteria will be awarded B.Tech (Honours) Degree.

**B. Eligibility Criteria for Minors**

i. The Student should have Minimum CGPA of 7.5 up to 4th Semester
ii. Student willing to opt for minors has to register at the beginning of 5th Semester
iii. The Student has to complete 5 additional courses from other discipline of their interest, which are specified in the respective discipline. These five courses should be of 4 credits each amounting to 20 credits.
iv. Student may opt for the courses from NPTEL/ SWAYAM platform. (if the credits of NPTEL/ SWAYAM courses do not match with the existing subject proper scaling will be done)

Student complying with these criteria will be awarded with B. Tech Degree in ------- Engineering with Minor in ---------Engineering. (For e.g.: B. Tech in Civil Engineering with Minor in Computer Engineering)