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

Padmabhooshan Vasantraodada Patil Institute of Technology, Budhgaon (Sangli)

Student Information Manual (SIM) 2023-24 SEM-I

First Year B. Tech.

Dr. V. P. ShetkariShikshanMandal's

PadmabhooshanVasantraodadaPatil

Institute of Technology, Budhgaon– 416304

STUDENT'S INFORMATION MANUAL

(Academic Year: 2023-24)

Semester-I

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

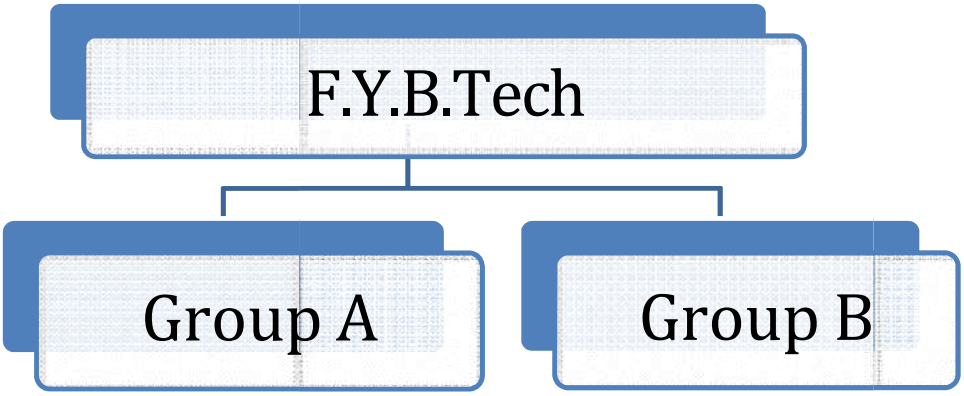
1. To create an environment where students can ascertain that career in engineering matches their interests and abilities.
2. To impart strong fundamental and technical knowledge in the basic science subjects to enable them to prepare themselves for successful career.
3. To inculcate habbit of innovation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

(With effective from Academic Year 2022-23)



Group A

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

Group B

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

(Computer Science and Engineering/ Computer Science and Engineering (AI&DS) / Electronics and Computer Science Engineering / Instru. and Control Engineering)

Sr. No	Course Code	Name of Course	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
1	BTBS101	Engineering Mathematics-I	3	1	-	20	20	60	100	4
2	BTBS102	Engineering Chemistry	3	1	-	20	20	60	100	4
3	BTES103	Engineering Mechanics	2	1	-	20	20	60	100	3
4	BTES104	Computer Programming in C	3	-	-	20	20	60	100	2
5	BTES105	Workshop Practices	-	-	4	60	-	40	100	2
6	BTES106	Basic Electrical and Electronics Engineering	2	-	-	50	-	-	50	Audit
7	BTES107L	Computer Programming Laboratory	-	-	2	60	-	40	100	1
8	BTBS108L	Engineering Chemistry Laboratory	-	-	2	60	-	40	100	1
9	BTE109L	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	Email id	Contact No.
1	Engineering Mathematics-I	BS101	Mr. R. U. Yadav	ruyadav.ge@pvpitsangli.edu.in	7776074138
2	Engineering Physics	BS102	Dr. S. L. Patil	slpatil.ge@pvpitsangli.edu.in	9423269875
3	Engineering Graphics	BE103	Mr. S. B. Khandagale	sbkhandagale@pvpitsangli.edu.in	7798934522
4	Communication Skill	HM104	Mr. S. E. Narwade	senarwade.ge@pvpitsangli.edu.in	9527057048
5	Energy and Environmental Engineering	ES105	Mr. A. J. Pawar	ajpawar@pvpitsangli.edu.in	7769033396
6	Basic Civil and Mechanical Engineering	ES106	Mr. M. S. Kakmare	mskakamare.civil@pvpitsangli.edu.in	9860681768

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	Mr. A. A. Shaikh	Physics	aashaikh.ge@pvpitsangli.edu.in	9623819950
02	II	Mrs. S. S. Patil	CSE	sapnasajane@gmail.com	8788584742
03	III	Mr. S. E. Narwade	Communication Skill	senarwade.ge@pvpitsangli.edu.in	9527057048
04	IV	Ms. A. K. Patil	Mathematics	akpatil.ge@pvpitsangli.edu.in	9623653978
05	V	Mrs. A. V. Patil	Mathematics	avpatil.ge@pvpitsangli.edu.in	9561212878
06	VI	Ms. P. B. Patil	Chemistry	pbpatil.ge@pvpitsangli.edu.in	9518599062
07	VII	Mr. R. U. Yadav	Mathematics	ruyadav.ge@pvpitsangli.edu.in	8668386745

COURSE TEACHERS

SEM-I

Division/ Class / Course	II	IV	VI	VII
Engineering Mathematics-I	Dr. Mrs. A. A. Patil	Ms. A. K. Patil	Ms. S. S. Kadam	Mr. R. U. Yadav
Engineering Chemistry	Mrs. D. A. Lavate	Ms. A. B. Aawate	Ms. P. B. Patil	Mrs. D. A. Lavate
Engineering Mechanics	Mr. A. A.Kusnale	Mr. N. S. Bembade	Mr. A. A. Kusnale	Mr. M. S. Kakmare
Computer Programming in C	Mrs. S. S. Patil	Mrs. M. S. Patil	Mrs. P. V. Koli	Ms. T. S. Upadhye
Basic Electrical and Electronic Engineering	Mrs. A. B. Patil Mr. M. V. Dongare	Mrs. A. B. Patil Mr. M. V. Dongare	Mrs. A. B. Patil Mr. M. V. Dongare	Mrs. A. B. Patil Mr. M. V. Dongare

ACADEMIC CALENDAR 2023-24 SEM-I

Dr V P S S M' s
Padmabhooshan Vasantraodada Patil Institute of Technology, Budhgaon (Sangli) First Year Engineering Department
Academic Calendar 2023-24
SEM I

August 2023 — **Academic Days: 18**

MON	TUE	WED	THUR	FRI	SAT	SUN
	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			

Induction Program :- 8th -26st August 2023
Independence Day :- 15th August 2023
Parsi New Year :- 16th August 2023
Commencement of classes:-28th August 2023
List of non-Reported students :- 31st August 2023

September 2023 — **Academic Days: 22**

MON	TUE	WED	THUR	FRI	SAT	SUN
				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	

Teachers Day :- 5th September 2023
Foundation Day :- 12th September 2023
Engineer's Day :- 15th September 2023
Vishveshwarya Knowledge Series :- 12th-14th September 2023
Ganesh Chaturthi :- 19th September 2023
Eid-E- Milad:- 28th September 2023
CA1 Evaluation: - 27th -30th September 2023
1st Defaulter students list :- 30th September2023

October 2023 — **Academic Days: 22**

MON	TUE	WED	THUR	FRI	SAT	SUN
30	31					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

Mahatma Gandhi Jayanthi :- 2nd October 2023
Mid Semester Exam:-9th October -11th October2023
Dusshera :- 24th October 2023
Late Vishnuanna Patil Jayanti :- 4th October 2023
Late Madanbhau Patil Punyatithi :- 16th October 2023
Display of Mid Semester Marks :- 18th October -20th October2023
Parents Meeting :- 28th October 2023
2ndDefaulter students list :- 31st October 2023

November 2023 — **Academic Days: 21**

MON	TUE	WED	THUR	FRI	SAT	SUN
		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			

Diwali :- 12th -14th November 2023
Padm. Vasantrao Patil Jayanti:- 13th November 2023
CA2 Evaluation: - 20th -22th November 2023
Guru Nanak Jayanti :- 27th November 2023
End of Classes :- 25th November 2023
Practical Exam :- 28th-30th November
3rd Defaulter students list :- 30th November2023

December 2023 — **Academic Days: 0**

MON	TUE	WED	THUR	FRI	SAT	SUN
				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

End Semester Examination :- 1st December 2023 onwards

Every Thursday and Wednesday Guest Lecture Series

SIP | Holiday | Exam

Dr. Anushka A.Patil
HoD, First Year Engineering

Dr. K. K. Pandyaji
Dean Academic

Dr. B. S. Patil
I/C Principal

	Dr. Vasantraodada Patil Shtekari Shikshan Mandal's **Padmabhooshan Vasantraodada Patil Institute Of Technology, Budhgaon. (Sangli)** **FIRST YEAR ENGINEERING DEPARTMENT (F. Y. B. Tech)** **TIMETABLE 2020-21 SEM-I**	**With Effect From 28/08/2023**

TIME TABLE

Dr. Vasantraodada Patil Shtekari Shikshan Mandal's

Padmabhooshan Vasantraodada Patil Institute Of Technology, Sangli (Budhgaon).

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

TIMETABLE 2023-24 SEM-I

With Effect From 28/08/2023

Class: FE-II Branch: - Comp. Sci. Engineering CHEMISTRY Group CL-05

SrN	TIME IN HRS	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	10:00 TO 11:00	B1- ES103 (T)/ $/@ B2- ES105L B3- BS107L	ES104-SSP	B1- ES108L B2- ES105L B3- 102(T)/101(T)	B1- ES105L B2- 102(T) /101(T) B3- ES103(T) /$/@	BS101-AAP	*$- LVH - Library Visit Hour*
2	11:00 TO 12:00		BS101-AAP			BS102-DAL	*@- IITST- IIT Spoken Tutorial*
	12:00 TO 12.45		*LONG*	*RECESS*			**-Extra*
3	12.45 TO 13:45	BS101-AAP	B1- BS107L B2- ES108L B3- ES105L	BS102-DAL	*BS101-AAP	B1- 102(T) /101(T) B2- ES103(T)/ $/@ B3- ES105L	*# - Alternate (T)-Tutorial*
4	13:45 TO 14:45	ES104-SSP		ES106-ABP	ES104-SSP		
	14:45 TO 15:00		*SHORT*	*RECESS*			
5	15:00 TO 16:00	B1- ES105L B2- BS107L B3- ES108L	*B1- ES109L *B2- ES109L *B3- ES109L	# TPO Session / Guest Lec. / M-M / Counselor Int.	ES103-AAK	ES103-AAK	# M-M / Counselor Int.- Mentee –Mentor or Counselor Interaction
6	16:00 TO 17:00				BS102-DAL	ES106-MVD	

AAP-/A A Patil DAL-/D A Lavate AAK-A A Kusnale SSP-/S S Patil ABP-/A B Patil MVD- M V Dongare

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	BS101	Engineering Mathematics-I	4	ES104	Computer Programming in C	7	BS107L	Engineering Chemistry Laboratory
2	BS102	Engineering Chemistry	5	ES105L	Workshop Practices	8	ES108L	Engineering Mechanics Laboratory
3	ES103	Engineering Mechanics	6	ES106	Basic Electrical & Electronics Engineering	9	ES109L	Computer Programming inC Laboratory*

(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 Shtekari Shikshan Mandal's

Padmabhooshan Vasantraodada Patil Institute Of Technology, Sangli (Budhgaon).

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

TIMETABLE 2023-24 SEM-I

With Effect From 28/08/2023

Class: FE-IV Branch: Comp. Sci. Engineering CHEMISTRY Group CL-06

SrN	TIME IN HRS	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	10:00 TO 11:00	ES106-MVD	D1- ES103(T)/ $/@ D2- ES105L D3- BS107L	BS102-ABA	D1- ES108L D2- ES105L D3- 102(T) /101(T)	BS101-AKP	*$- LVH - Library Visit Hour*
2	11:00 TO 12:00	ES103-NSB		ES104-MSP		ES106-ABP	*@- IITST- IIT Spoken Tutorial*
	12:00 TO 12.45		*LONG*	*RECESS*			**-Extra*
3	12.45 TO 13:45	D1- 102(T)/101(T) D2- ES103(T)/ $/@ D3- ES105L	BS101-AKP	D1- BS107L D2- ES108L D3- ES105L	BS101-AKP	ES104-MSP	*# - Alternate*
4	13:45 TO 14:45		ES103-NSB		ES104-MSP	BS102-ABA	*(T)-Tutorial*
	14:45 TO 15:00		*SHORT*	*RECESS*			
5	15:00 TO 16:00	BS102-ABA	D1- ES105L D2- BS107L D3- ES108L	# TPO Session / Guest Lec. / M-M / Counselor Int.	*D1- ES109L *D2- ES109L *D3- ES109L	D1- ES105L D2- 102(T)/101(T) D3- ES103(T) /$/@	# M-M / Counselor Int. Mentee –Mentor or Counselor Interaction
6	16:00 TO 17:00	*BS101-AKP					

AKP-/A K Patil ABA-/A B Aawate NSB-N S Bembade MSP-/M S Patil ABP-/A B Patil MVD- M V Dongare

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	BS101	Engineering Mathematics-I	4	ES104	Computer Programming inC	7	BS107L	Engineering Chemistry Laboratory
2	BS102	Engineering Chemistry	5	ES105L	Workshop Practices	8	ES108L	Engineering Mechanics Laboratory
3	ES103	Engineering Mechanics	6	ES106	Basic Electrical & Electronics Engineering	9	ES109L	Computer Programming inC Laboratory*

(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**

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Dr. Vasantraodada Patil Shtekari Shikshan Mandal's

Padmabhooshan Vasantraodada Patil Institute Of Technology, Sangli (Budhgaon).

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

TIMETABLE 2023-24 SEM-I

With Effect From 28/08/2023

Class: FE-VI Branch: Electronics and Comp. Science Engg. CHEMISTRY Group CL-07

SrN	TIME IN HRS	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	10:00 TO 11:00	ES103-AAK	BS101-SSK	F1- ES103 (T)/ $/@ F2- ES105L F3- BS107L	ES104-PVK	F1- ES108L F2- ES105L F3- 102(T) /101(T)	$- LVH - Library Visit Hour
2	11:00 TO 12:00	BS101-SSK	ES104-PVK		ES103-AAK		@- IITST- IIT Spoken Tutorial
	12:00 TO 12.45		LONG	RECESS			*-Extra
3	12.45 TO 13:45	ES104-PVK	F1- 102(T)/101(T) F2- ES103 (T)/ $/@ F3- ES105L	ES106-ABP	F1- BS107L F2- ES108L F3- ES105L	*BS101-SSK	# - Alternate (T)-Tutorial
4	13:45 TO 14:45	BS102-PBP		BS101-SSK		BS102-PBP	
	14:45 TO 15:00		SHORT	RECESS			
5	15:00 TO 16:00	F1- ES105L F2- 102(T) /101(T) F3- ES103(T)/ $/@	ES106-MVD	# TPO Session / Guest Lec. / M-M / Counselor Int.	F1- ES105L F2- BS107L F3- ES108L	*F1- ES109L *F2- ES109L *F3- ES109L	# M-M / Counselor Int. Mentee –Mentor or Counselor Interaction
6	16:00 TO 17:00		BS102-PBP				

SSK-/S S Kadam PBP-/P B Patil AAK-A A Kusnale PVK-/P V Koli ABP-A B Patil MVD- M V Dongare

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	BS101	Engineering Mathematics-I	4	ES104	Computer Programming inC	7	BS107L	Engineering Chemistry Laboratory
2	BS102	Engineering Chemistry	5	ES105L	Workshop Practices	8	ES108L	Engineering Mechanics Laboratory
3	ES103	Engineering Mechanics	6	ES106	Basic Electrical & Electronics Engineering	9	ES109L	Computer Programming inC Laboratory*

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Dr. Vasantraodada Patil Shtekari Shikshan Mandal's

Padmabhooshan Vasantraodada Patil Institute Of Technology, Sangli (Budhgaon).

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

TIMETABLE 2023-24 SEM-I

With Effect From 28/08/2023

Class: FE-VII Branch: ECS + CSE (AIDS) +Instru. & Control CHEMISTRY Group CL-06/07

SrN	TIME IN HRS	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	10:00 TO 11:00	G1- ES108L G2- ES105L G3- 102(T) /101(T)	ES106-MVD (CL-06)	BS101- RUY (CL-07)	G1- 102(T)/101(T) G2- ES103 (T)/ $/@ G3- BS107L	ES103-MSK (CL-07)	*$- LVH - Library Visit Hour*
2	11:00 TO 12:00		ES104-TSU (CL-07)	BS102-DAL (CL-07)		ES104-TSU (CL-07)	*@- IITST- IIT Spoken Tutorial*
	12:00 TO 12.45		*LONG*	*RECESS*			**-Extra*
3	12.45 TO 13:45	BS101-RUY (CL-06)	ES104-TSU (CL-07)	G1- ES103 (T)/ $/@ G2- ES105L G3- ES105L	BS102-DAL (CL-07)	G1- BS107L G2- ES108L G3- ES105L	*# - Alternate (T)-Tutorial*
4	13:45 TO 14:45	BS102-DAL (CL-06)	ES103-MSK (CL-07)		BS101- RUY (CL-06)		
	14:45 TO 15:00		*SHORT*	*RECESS*			
5	15:00 TO 16:00	*G1- ES109L *G2- ES109L *G3- ES109L	G1- ES105L G2- 102(T) /101(T) G3- ES103(T)/ $/@	# TPO Session / Guest Lec. / M-M / Counselor Int.	ES106-ABP (CL-07)	G1- ES105L G2- BS107L G3- ES108L	# M-M / Counselor Int. Mentee –Mentor or Counselor Interaction
6	16:00 TO 17:00				*BS101- RUY (CL-07)		

RUY-R U Yadav DAL-/D A Lavate MSK-M S Kakmare TSU- T S Upadhye ABP-A B Patil MVD- M V Dongare

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	BS101	Engineering Mathematics-I	4	ES104	Computer Programming in C	7	BS107L	Engineering Chemistry Laboratory
2	BS102	Engineering Chemistry	5	ES105L	Workshop Practices	8	ES108L	Engineering Mechanics Laboratory
3	ES103	Engineering Mechanics	6	ES106	Basic Electrical & Electronics Engineering	9	ES109L	Computer Programming inC Laboratory*

(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 books and 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 – I (4 Credits)
BTBS101

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 the application of the matrix technique (Linear algebra) to find solutions of system of linear equations arising in many engineering problem
2. To know and apply the concept partial derivatives and their applications to Maxima/ Minima, series expansion of multi valued functions.
3. To understand Computation of Jacobian of functions of several variables and their applications to engineering problems
4. To identify and sketch of curves in various coordinate system.
5. To evaluate multiple integrals and their applications to area and volume.

Course Outcomes:

Students will be able to :

1. Apply the matrix technique (Linear algebra) to find solutions of system of linear equations arising in many engineering problem
2. Explain the concept of partial derivatives and calculate the Jacobian function and its properties and their applications to engineering problems.
3. Evaluate multiple integrals and their applications to area and volume by identifying and tracing curves in Cartesian, Polar and parametric coordinate systems.

Unit No.	Details of Content	Hrs
1.	**Linear Algebra- Matrices** Inverse of a matrix by Gauss-Jordan method; Rank of a matrix; Normal form of a matrix ; Consistency of non- homogeneous and homogeneous system of linear equations ; Eigen values and eigen vectors ; Properties of eigen values and eigen vectors (without proofs); Cayley- Hamilton‟s theorem (without proof) andits applications.	6
2.	**Partial Differentiation** Partial derivatives of first and higher orders; Homogeneous functions – Euler‟s Theorem for functions containing two and three variables (with proofs); Total derivatives; Change of variables.	6
3.	**Applications of Partial differentiation** Jacobians - properties; Taylor‟s and Maclaurin‟s theorems (without proofs) for functions of two variables; Maxima and minima of functions of two variables; Lagrange‟s method of undetermined multipliers.	6
4.	**Reduction Formulae and Curve Tracing** Tracing of the curves given in Cartesian, parametric and polar forms. Reduction formulae for $\int_0^{\frac{\pi}{2}} \sin^n x\, dx$, $\int_0^{\frac{\pi}{2}} \cos^n x\, dx$, $\int_0^{\frac{\pi}{2}} \sin^n x \cos^n x\, dx$	6

5.	**Multiple Integrals** Double integration in Cartesian and polar co-ordinates; Evaluation of double integrals by changing the order of integration and changing to polar form; Triple integral; Applications of multiple integrals to find area as double integral , volume as triple integral and surface area.	**8**

Text Books

1) Higher Engineering Mathematics by B. S. Grewal, Khanna Publishers, New Delhi
2) Advanced Engineering Mathematics by Erwin Kreyszig, John Wiley and Sons, New York
3) A Course in Engineering Mathematics (Vol I) by Dr. B. B. Singh, Synergy Knowledgeware, Mumbai.
4) A Text Book of Applied Mathematics (Vol I and II) by P. N. Wartikar and J. N. Wartikar, Pune, Vidyarthi Griha Prakashan, Pune.
5) Higher Engineering Mathematics by H. K. Das and Er. RajnishVerma, S. Chand and CO. Pvt. Ltd., New Delhi.

Reference Books

1) Higher Engineering Mathematics by B. V. Ramana, Tata McGraw-Hill Publications, New Delhi.
2) A Text Book of Engineering Mathematics by Peter O' Neil, Thomson Asia Pte Ltd. , Singapore.
3) Advanced Engineering Mathematics by C. R. Wylie and L. C. Barrett, Tata Mcgraw-Hill Publishing Company Ltd., New Delhi.

General Instructions

- The tutorial classes in Engineering Mathematics-I are to be conducted batchwise. Each class should be divided into three batches for the purpose.
- 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.
- The minimum number of assignments should be eight covering all topics.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2022

Course: B. Tech. (Common to all Branches) **Semester : I**

Subject Code & Name: Engineering Mathematics – I (BTBS 101)

Max Marks: 60 **Date:** **Duration: 3 Hrs.**

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 Three of the following.**		**12**
A)	Reduce to the Normal form and find the rank of the given matrix. $A=\begin{bmatrix}1 & -2 & 0 & 1\\ 2 & -1 & 1 & 0\\ 3 & -3 & 1 & 1\\ -1 & -1 & -1 & 1\end{bmatrix}$	**Understand/ CO1**	**4**
B)	Test the consistency and solve: $3x+y+2z=3, 2x-3y-z=-3, x+2y+z=4$	**Understand/ CO1**	**4**
C)	Find the eigen value & eigen vector for least positive eigen value of the matrix: $A=\begin{bmatrix}1 & 0 & -1\\ 1 & 2 & 1\\ 2 & 2 & 3\end{bmatrix}$	**Understand/ CO1**	**4**
D)	Verify Cayley Hamilton theorem for the matrix $A=\begin{bmatrix}1 & 0 & 2\\ 0 & 2 & 1\\ 2 & 0 & 3\end{bmatrix}$	**Understand/ CO1**	**4**
Q.2	**Solve Any Three of the following:**		**12**
A)	If $u=\log(x^2+y^2)+\tan^{-1}\left(\frac{y}{x}\right)$ then find the value of $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}$	**Understand/ CO2**	**4**
B)	If $v=\log(x^2+y^2+z^2)$, prove that $(x^2+y^2+z^2)\left(\frac{\partial^2 v}{\partial x^2}+\frac{\partial^2 v}{\partial y^2}+\frac{\partial^2 v}{\partial z^2}\right)=2$	**Understand/ CO2**	**4**
C)	$u=\sin^{-1}\left(x^2+y^2\right)^{\frac{1}{5}}$ then find the value of $x^2\frac{\partial^2 u}{\partial x^2}+2xy\frac{\partial^2 u}{\partial x\partial y}+y^2\frac{\partial^2 u}{\partial y^2}$	**Understand/ CO2**	**4**
D)	Find $\frac{du}{dt}$ when $u=xy^2+x^2y$, $x=at^2$, $y=2at$	**Understand/ CO2**	
Q. 3	**Solve Any Three of the following:**		**12**
A)	If $u=x^2-2y^2$, $v=2x^2-y^2$ Where $x=r\cos\theta$, $y=r\sin\theta$ then show	**Understand/ CO3**	**4**

	that $\frac{\partial(u,v)}{\partial(r,\theta)} = 6r^3 \sin 2\theta$		
B)	Show that $JJ' = 1$ if $x = u(1-v)$, $y = uv$	Understand/ CO3	4
C)	Discuss the maxima and minima of the function $x^2 + y^2 + 6x + 12$	Understand/ CO3	4
D)	Expand $f(x,y) = x^2y + 3y - 2$ in the powers of $(x-1)$ and $(y+2)$ using Taylor's theorem	Understand/ CO3	4
Q.4	**Solve Any Three of the following:**		12
A)	Prove that $\int_0^\infty \frac{t^4}{(1+t^2)^3} dt = \frac{3\pi}{16}$	Understand/ CO4	4
B)	Trace the Curve $a^2y^2 = x^2(a^2 - x^2)$	Understand/ CO4	4
C)	Trace the Curve $x = a(t - \sin t)$, $y = a(1 - \cos t)$	Understand/ CO4	4
D)	Trace the Curve $r = a\cos 2\theta$	Understand/ CO4	4
Q. 5	**Solve the following:**		12
A)	Evaluate $\int_0^1 \int_0^y xy\, dxdy$	Understand/ CO5	4
B)	Change the order of integration $\int_0^a \int_0^{\sqrt{a^2-x^2}} f(x,y)\, dydx$	Understand/ CO5	4
C)	Find the volume bounded by paraboloid $x^2 + y^2 = az$, the cylinder $x^2 + y^2 = 2ay$ and the plane $z = 0$	Understand/ CO5	4
	*** End ***		

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Engineering Chemistry (4 Credit)
BTBS102

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** 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** 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** 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** **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. **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** 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
BTBS108L

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

End Semester Examination – Summer 2023

Date:-14/07/2023

Course: B.Tech. **Sem: II**

Subject: Engineering Chemistry **Subject code: BTBS202**

Marks: 60 **Duration: 3 hr.**

Instructions for students:

1. All the questions are compulsory.
2. Draw a neat labelled diagram wherever necessary.
3. Read question properly

		Level/CO	Marks
Q1	**Solve any TWO of the following**:		
A)	Explain the zeolite process of softening of water with its advantages and disadvantages.	(understanding)	06
B)	Explain in detail Hot-Lime Soda process with its advantages and disadvantages.	(understanding)	06
C)	How does the Hardness of water determine by EDTA complexometric method.	(Apply)	06
Q2.	**Q2. Solve any TWO of the following**:		
A)	State phase rule equation. Explain the term component of phase rule with examples.	(Understanding)	06
B)	Explain phase diagram of one component water system with neat labelled diagram.	(Understanding)	06
C)	What is meant by Eutectic point? Explain silver-lead 2 component alloy system with phase diagram.	(application)	06
Q3.	**Solve any TWO of the following**:		
A)	Write a note on Dry/Chemical corrosion. Explain mechanism of corrosion due to oxygen.	(knowledge)	06
B)	B) Suggest the criteria for selection of metal and role of proper designing for corrosion control.	(understanding)	06
C)	C) Define Anodic protection method and explain the process with the help of neat labelled diagram.	(knowledge)	06
Q4.	**Solve any TWO of the following**:		
A)	Define Calorific value and the concept of Gross and Net calorific value.	(knowledge)	06
B)	What are the conditions under which solid lubricants are used and write a note on Graphite.	(application)	06
C)	Describe Fractional distillation process with neat labelled diagram and give end use of each fraction.	(Understanding)	06
Q5	**Solve any TWO of the following**		
A)	A) Define Ohm's law, Specific conductance, equivalent conductance, molecular conductance, and cell constant with their units.	(Understanding)	06

B)	B) Write a note on Ostwald's theory of acid base indicators.	(knowledge)	06
C)	C)What is conductometric titration? Explain conductometric titration of strong acid versus strong base with graphical representation.	(Application)	06

Engineering Mechanics (3 Credits)
BTES103

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** 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 BTES109L	
Practical Scheme Lecture: 2hrs/ Batch External Exam:-40 Marks	**Evaluation Scheme** Continuous Assessment:- 60 Marks
Sr. No.	Students are expected to satisfactorily complete any ten experiments listed below. **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 Semester Examination – Summer 2023

Course: First Year B. Tech. (Semester II) **Branch: Group A / Group B**

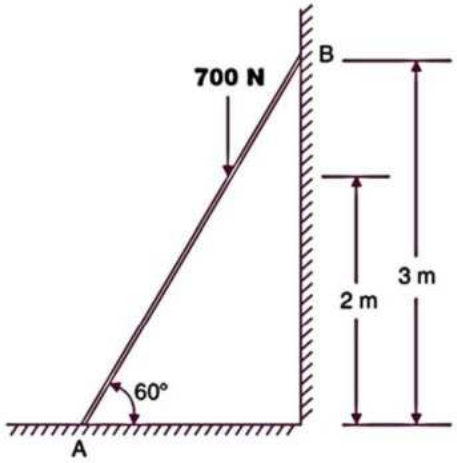
Subject Name: Engineering Mechanics **Subject Code: BTES203**

Max Marks: 60 **Date: 17/07/2023** **Duration: 3 Hrs.**

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.*

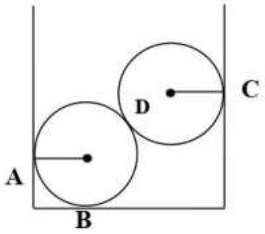
		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	(I) Define following terms: Static, Dynamic, Law of parallelogram, Lami's Theorem. (II) Write down the characteristics of force.	**Remember**	**06**
B)	A ladder weighing 100 N is to be kept in the position shown in figure, resting on a smooth floor and leaning on a smooth wall, also a man weighing 700 N is at 2m above floor level. Determine (i) The horizontal force F required at floor level to prevent it from slipping. (ii) If the horizontal force F is to be applied at a height of 1 m above the ground level, how much should F be?	**CO 1**	**06**



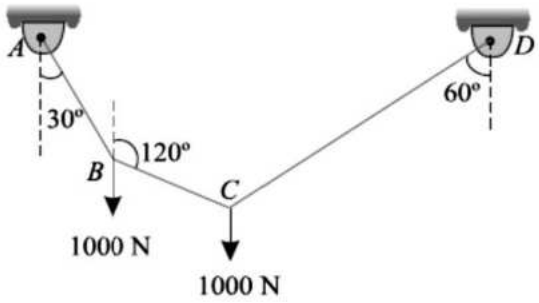
C)	The following forces are acting at a point: (i) 20 N inclined at 30^0 from East to North, (ii) 25 N towards North, (iii) 30 N inclined at 45^0 from North to West, (iv) 35 N inclined at 40^0 from West to South. Find the magnitude and direction of the resultant force.	**CO 1**	**06**

Q. 2 Solve Any Two of the following.

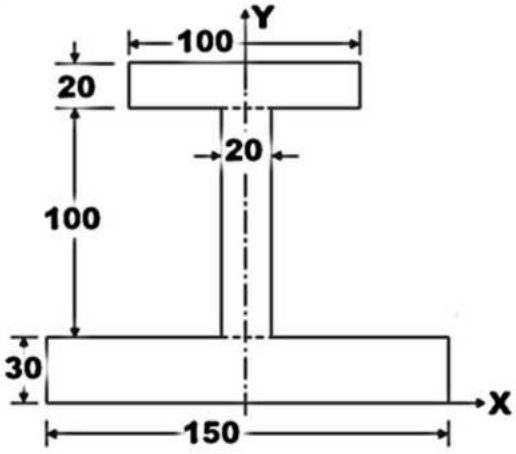
A) The cylindrical rollers of weight 50 N each having radius 0.3 m are placed inside a cup having base width 1 m. Find reactions at points of contact A, B, C and D. **CO 1** **06**



B) A string ABCD, attached to fixed points A and D has two equal weights of 1000 N attached to it at B and C. The weights rest with the portions AB and CD inclined at angles. Find the tensions in the portions AB, BC and CD of the string, if the inclination of the portion BC with the vertical is 120°. **CO2** **06**



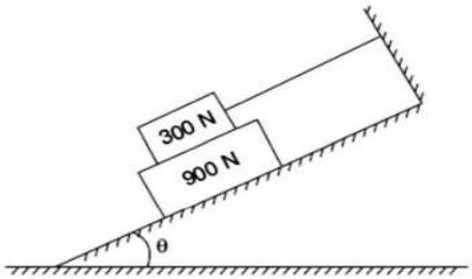
C) Locate the centroid of the I-section shown in figure with respect to the axes shown. (All dimensions are in mm) **Application** **06**



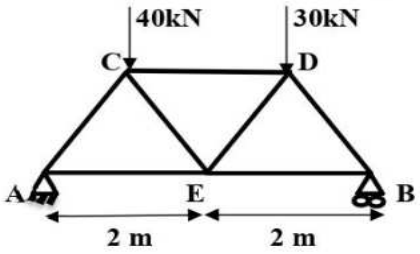
Q. 3 Solve Any Two of the following.

A) Define friction. What are the Coulomb's laws of dry friction? **Remember** **06**

B) What should be the value of θ 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. (Note: Upper block weighs 300 N) **CO2** **06**



C) Find out forces in all the members of truss. (All angles are 60°) **CO2** **06**



Q. 4 Solve Any Two of the following.

A) State and prove work energy principle. **Understand** **06**

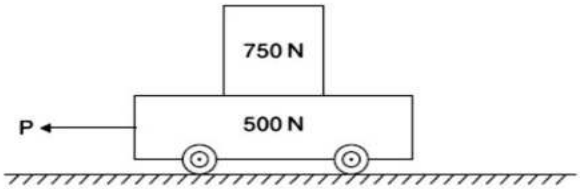
B) A body moves along a straight line and its acceleration 'a' which varies with time is given by $\mathbf{a = 2 - 3t}$. Five seconds after start of the observations, its velocity is found to be 20 m/sec. Ten seconds after start of the observation, the body is at 85 m from the origin. Determine its acceleration, velocity and distance from the origin. **CO 4** **06**

C) If a particle is projected inside a horizontal tunnel which is 5 meters high with velocity of 60 m/s, find the angle of projection and the greatest possible range. **CO 4** **06**

Q. 5 Solve Any Two of the following.

A) State and explain with mathematical equation: (i) Law of conservation of momentum (ii) Coefficient of restitution. **Remember** **06**

B) A 750 N crate rests on a 500 N cart. The coefficient of friction between the crate and the cart is 0.3 and between cart and the road is 0.2. If the cart is to be pulled by a force P such that the crate does not slip. **CO 5** **06**



Using D' Alembert's principle, determine:

(i) the maximum allowable magnitude of P,

(ii) the corresponding acceleration of the cart.

C)	A 1500 N block is in contact with a level plane, the coefficient of friction between two contact surfaces being 0.1. If the block is acted upon by a horizontal force of 300 N, what time will elapse before the block reaches a velocity of 16 m/sec starting from rest? If 300 N force is then removed, how much longer will the block continue to move? Solve the problem using impulse momentum equation.	**CO 5**	**06**

***** End *****

Computer Programming in C (2 Credits)
BTES104

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
BTES107L

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 Summer Examination – 2023

Course: B. Tech. **Branch : Civil/Chemical/Petrochemical/Mechanical** **Semester :II**

Subject Code & Name: Computer Programming in C [BTES204]

Max Marks: 60 **Date:** **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) Write note on Program Process Development.

B) Write an algorithm and draw a flowchart for a program to print sum and average of 'n' natural numbers.

C) Write a short note on the Tokens in C Language.

Q.2 Solve Any Two of the following. **[12]**

A) Write a program to find the maximum number from 3 numbers enter by user.

B) Explain any three types of operators along with it's precedence and associativity.

C) Write a program to create simple calculator to perform addition, subtraction, division, and multiplication operations.

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

A) Write a program to print area of square using function.

B) Write a program to print factorial of a given number using while and also, write the program using do….while loop.

C) Differentiate between while and do…...while loop.

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

A) Write a program to perform and to print the addition and subtraction of the two Matrices.

B) Write a program to perform the following operations on the string (With and without using library function):

1. find length of string 2. copy 3. concatenation 4. reverse.

C) Write syntax of following Concepts of C:
1. Array 2. Switch 3. Function

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

A) Write a program in C to create a structure of student with fields such as Student Name, Roll Number and Marks of two subjects as its members. Calculate average of two subjects. Read the details of 'n' students from user and then display the data in this format.

Roll No. Name Sub1 Sub2 Total Average

B) Write a program in C to create a structure having named as Books consists of title, author, subject, book_id as its members. Read the details of five books from user and then display the data entered by the user on Screen (Use array of structure).

C) Define structure with suitable example. What is difference between structure and Union?

***** End *****

Basic Electrical and Electronics Engineering (Audit)
BTES106

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:** 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. 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
BTES105

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)