



### List of New Course(s) Introduced

Department : **Chemical Engineering**

Programme Name : **B.Tech.**

Academic Year : **2019-20**

### **List of New Course(s) Introduced**

Sr. No.	Course Code	Name of the Course
01.	CH03TBS05	Biology
02.	CH03TES04	Engineering And Solid Mechanics
03.	CH04PPC05	Process Instrumentation Lab



Minutes of Meetings (MoM) of Board of Studies (BoS)

**Academic Year : 2019-20**

**School : School of Studies of Engineering and Technology**

**Department : Chemical Engineering**

**Date and Time : May 13, 2019 - 11:30 AM**

**Venue : HoD Room**

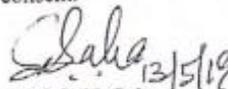
Minutes of Meetings

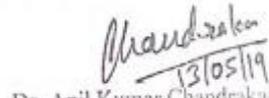
The scheduled meeting of member of Board of Studies (BOS) was held today (13<sup>th</sup> May 2019) in the office of Prof. S.N. Saha, Chemical Engineering Department to discuss the B.Tech. III and IV semester scheme and syllabi. The following members were present in the meeting:

1. Prof. S. N. Saha (Member BOS, Dept. of Chemical Engg)
2. Dr. Anil Kumar Chandrakar (HoD (I/c), Chemical Engg. -cum- Chairman, BOS)
3. Mrs. A. N. Joshi (Member BOS, Dept. of Chemical Engg)
4. Mr. Amit Jain (Invited Member, Astd. Prof., Dept. of Chemical Engg.)
5. Mr. G. P. Dewangan (Invited Member, Astd. Prof., Dept. of Chemical Engg.)
6. Dr. Sandeep Singh (Invited Member, Astd. Prof., Dept. of Mathematics)
7. Ms. Jasinta Poonam Ekka (Invited Member, Astd. Prof., Dept. of Mechanical Engg.)

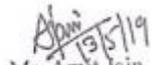
The committee discussed and resolved to approve the scheme and syllabi of B.Tech. III and IV semester.

Since external expert BOS member Prof. (Mrs.) A. B. Soni, Dept. of Chemical Engg. and external industry expert BOS member, Mr. Suprangya Mohanty could not attend this meeting due to their pre-occupation, as per discussion between members present in the meeting, this scheme and syllabus is being sent to external BOS members for their review and formal consent.

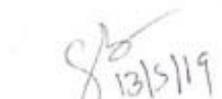
  
Prof. S. N. Saha  
Member, BOS  
Professor, Chemical Engg.

  
Dr. Anil Kumar Chandrakar  
Chairman, BOS  
HoD (I/c), Chemical Engg.

  
Mrs. A. N. Joshi  
Member, BOS  
Astd. Prof., Chemical Engg.

  
Mr. Amit Jain  
Invited Member  
Astd. Prof., Chemical Engg.

  
Mr. G. P. Dewangan  
Invited Member  
Astd. Prof., Chemical Engg.

  
Dr. Sandeep Singh  
Invited Member  
Astd. Prof., Dept. of Mathematics

  
Ms. Jasinta Poonam Ekka  
Invited Member  
Astd. Prof., Mechanical Engg.



The following courses were revised in the of B. Tech. Second year (III and IV Semesters) :

- ❖ Mathematics-III (CH03TBS06)
- ❖ Material And Energy Balance Calculations (CH03TPC01)
- ❖ Fluid Mechanics (CH03TPC02)
- ❖ Thermodynamics-II (CH03TPC03)
- ❖ Numerical Methods In Chemical Engineering (CH04TPC04)
- ❖ Particle And Fluid Particle-Processing (CH04TPC06)
- ❖ Process Instrumentation (CH04TPC07)

The following new courses were introduced in the of B. Tech. Second year (III and IV Semesters):

- ❖ Biology (CH03TBS05)
- ❖ Engineering And Solid Mechanics (CH03TES04)
- ❖ Process Instrumentation Lab (CH04PPC05)

विभागाध्यक्ष, रासायनिक अभियांत्रिकी  
**HoD, Chemical Engineering**  
प्रौद्योगिकी संस्थान/Institute of Technology  
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)  
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

Signature & Seal of HoD



## Scheme and Syllabus

SCHOOL OF STUDIES, ENGINEERING & TECHNOLOGY  
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)  
(A Central University Established by the Central University Ordinance 2009, No. 3 of 2009)

**SCHEME FOR EXAMINATION (Effective from session 2019-20)**  
B. TECH. (FOUR YEAR) DEGREE COURSE, CHEMICAL ENGINEERING

### SECOND YEAR, THIRD SEMESTER

S.No.	Course No.	Subject	Periods			Evaluation Scheme			Credits
			L	T	P	Sessional Exam			
						IA	ESE	Total	
01	CH03TBS05	Biology <span style="color: blue;">New Course</span>	3	1	0	30	70	100	4
02	CH03TBS06	Mathematics -III	3	1	0	30	70	100	4
03	CH03TES04	Engineering and Solid Mechanics <span style="color: blue;">New Course</span>	3	1	0	30	70	100	4
04	CH03TPC01	Material and Energy Balance Calculations	3	1	0	30	70	100	4
05	CH03TPC02	Fluid Mechanics	3	1	0	30	70	100	4
06	CH03TPC03	Thermodynamics -II	3	1	0	30	70	100	4
<b>Practical</b>									
01	CH03PPC01	Chemical Engineering Lab-I	0	0	3	30	20	50	1.5
02	CH03PPC02	Fluid Mechanics Lab	0	0	3	30	20	50	1.5
<b>Total</b>			<b>18</b>	<b>6</b>	<b>6</b>	<b>700</b>			<b>27</b>

IA – Internal Assessment  
Total Periods - 30

ESE- End Semester Examination  
Total Credits – 27

Total Marks - 700

BOS held on 13<sup>th</sup> May 2019



**SCHOOL OF STUDIES, ENGINEERING & TECHNOLOGY**  
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)**  
(A Central University Established by the Central University Ordinance 2009, No. 3 of 2009)

**SCHEME FOR EXAMINATION (Effective from session 2019-20)**  
**B. TECH. (FOUR YEAR) DEGREE COURSE, CHEMICAL ENGINEERING**

**SECOND YEAR, FOURTH SEMESTER**

S.No.	Course No.	Subject	Periods			Evaluation Scheme			Credits
			L	T	P	Sessional Exam			
						IA	ESE	Total	
01	CH04THS02	Business Communication and Presentation Skill	3	0	0	30	70	100	3
02	CH04TPC04	Numerical Methods in Chemical Engineering	3	1	0	30	70	100	4
03	CH04TPC05	Inorganic Chemical Technology	3	0	0	30	70	100	3
04	CH04TPC06	Particle and Fluid Particle-Processing	3	0	0	30	70	100	3
05	CH04TPC07	Process Instrumentation	3	0	0	30	70	100	3
<b>Practical</b>									
01	CH04PPC03	Numerical Methods in Chemical Engineering Lab	0	0	3	30	20	50	1.5
02	CH04PPC04	Particle and Fluid Particle-Processing Lab	0	0	3	30	20	50	1.5
03	CH04PPC05	Process Instrumentation Lab <span style="color: blue;">New Course</span>	0	0	3	30	20	50	1.5
<b>Total</b>			<b>15</b>	<b>1</b>	<b>9</b>			<b>650</b>	<b>20.5</b>

**IA – Internal Assessment**  
Total Periods - 25  
BOS held on 13<sup>th</sup> May 2019

**ESE- End Semester Examination**  
Total Credits – 20.5

**Total Marks - 650**

*Alor* 13/5/19  
*Goel* 13/5/19  
*13/05/19*

*Abandhan* 12/05/19  
*Saha* 12/5/19



**CH03TBS05**

**Biology**

[L:3, T:1,P:0]

**Objectives**

Students will be introduced to the basics of biology such as cell structure and functions, inheritance & evolution, basic concepts of genetics, and an introduction to microbiology

**Contents:**

1. Basics: Diversity of life, prokaryotes and eukaryotes, basic cell constituents and macromolecules. [6L + 1T]
2. Biochemistry: Metabolism (Catabolism and Anabolism) and Bioenergetics. [12L + 3T]
3. Genetics: Basic principles of Mendel, molecular genetics, structure and function of genes and chromosomes, Transcription and Translation, gene expression and regulation. [12L + 3T]
4. Cell Biology: Macromolecules, membranes, organelles, cytoskeleton, signalling, cell division, differentiation, and motility. [12L + 3T]
5. Microbiology: host-microbe interactions, physiology, ecology, diversity, and virology. [6L + 2T]

**Total 60 [L + T]**

**Course outcomes**

Students will get insight into biology as a science, outlining the diversity, organization and fundamental principles of living systems.

**Text Book**

1. Gardner, Simmons & Snustad "Principles of Genetics" Student Edition, Wiley publication, 2006.
2. P.K. Gupta, "Principles of Genetics", Rastogi Publication, 2018-19.
3. Prescott's, "Microbiology" Joanne Willey Publication.
4. David L. Nelson and Michael M. Cox, "PRINCIPLES OF BIOCHEMISTRY", W.H. Freeman & Company, 2008
5. Gerald Karp, Janet Iwasa, Wallace Marshall, "Karp's Cell Biology" Global Edition, 2018

*[Handwritten signatures and dates: 12/05/19, 12/05/19, 12/05/19, 13/05/19, 13/05/19, 13/05/19]*



CH03TES04 Engineering and Solid Mechanics

[L:3, T:1,P:0]

Objectives:

New Course Introduced

Students would be introduced to fundamentals of Engineering Mechanics with emphasis on force systems, axioms, and dynamics of rigid bodies. Second part of the course would be an introduction to Solid Mechanics, and students would be introduced to basic concepts of mechanics of deformable media: concept of stress tensor, strain tensor, strain rates, constitutive relations, and applications to one/two dimensional problems.

Contents:

1. Introduction, Point Kinematics: Moving point in various coordinate systems. (Cartesian, Cylindrical, Path) [3L+1T]
2. Rigid body kinematics: Translation and rotation, relative motion, angular velocity, General motion of a rigid body, General relative motion. [6L+2T]
3. Equivalent force systems, Resultant forces, Linear and Angular Momentum, Laws of motion (Euler's Axioms), Free Body Diagrams, Dynamics of point mass models of bodies. [6L+2T]
4. Equilibrium of rigid bodies, distributed forces, Analysis of structures: Trusses, Forces in Beams: Shear Force and Bending Moment. [9L+3T]
5. Frictional forces, Laws of Coulomb friction, impending motion. [3L+1T]
6. Inertia tensor, Principal Moments of Inertia, Moment of momentum relations for rigid bodies, Euler's Equations of Motion. [6L+2T]
7. State of stress at a point, equations of motion, principal stress, maximum shear stress, Concept of strain, strain displacement relations, compatibility conditions, principal strains, transformation of stress/strain tensor, state of plane stress/strain. [6L+2T]
8. Uniaxial stress and strain analysis of bars, thermal stresses, Torsion of circular bars and thin walled members, Bending of straight/curves beams, transverse shear stresses, deflection of beams, Buckling of columns. [6L+2T]

Total 60[L+T]

Text/Reference Books:

1. Irving H. Shames, Engineering Mechanics, 4th Edition, Prentice Hall. (2006)
2. F. P. Beer and E. R. Johnston, Vector Mechanics for Engineers, Vol I - Statics, Vol II, - Dynamics, 9th Ed, Tata McGraw Hill. (2011)
3. Andy Ruina and Rudra Pratap, Introduction to Statics and Dynamics, Oxford University Press. (2011)
4. Shames and Rao, Engineering Mechanics, Pearson Education. (2006)
5. Bansal R.K., A Text Book of Engineering Mechanics, Laxmi Publications. (2010)
6. Khurmi R.S., Engineering Mechanics, S. Chand & Co. (2010)
7. Tayal A.K., Engineering Mechanics, Umesh Publications. (2010)

Course outcomes

Students will be able to

- Understand the use of basic concepts of Resolution and composition of forces

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