



### List of Revised Courses

Department : **Chemical Engineering**

Program Name : **B.Tech.**

Academic Year : **2016-17**

### **List of Revised Courses**

Sr. No.	Course Code	Name of the Course
01.	CH4TBS06	Numerical Analysis & Computer Applications



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

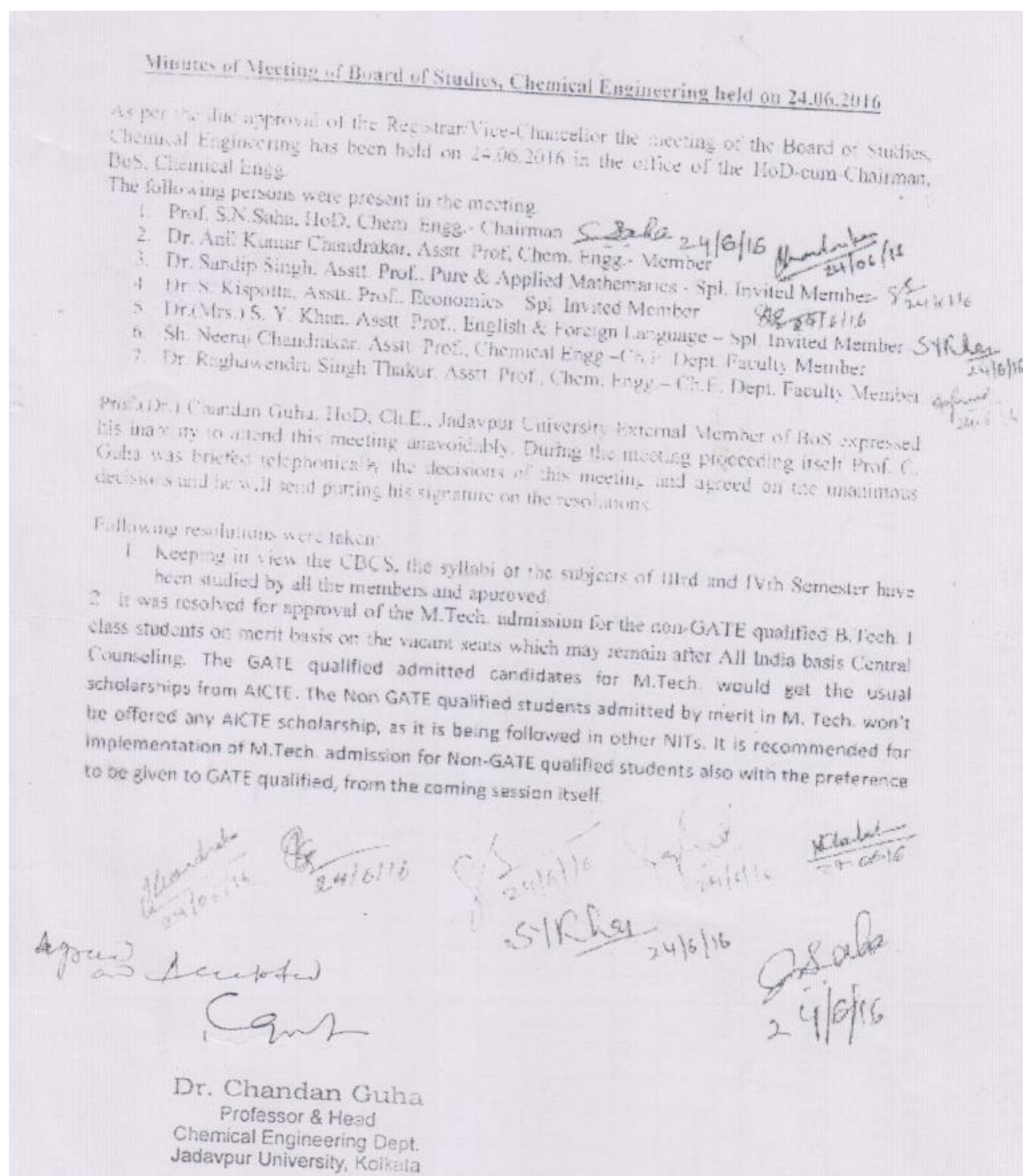
**Academic Year : 2016-17**

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

**Department : Chemical Engineering**

**Date and Time : May 24, 2016 - 11:30 AM**

**Venue : HOD Office**





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

- ❖ Numerical Analysis & Computer Applications (CH4TBS06)

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

- ❖ Engineering Economics (CH3THS03)
- ❖ Fundamentals of Chemical Engineering (CH3TPC01)
- ❖ Business Communication and Presentation Skill (CH4THS05)

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

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

**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	MSE	Total	ESE		Sub Total
01	CH3THS03	Engineering Economics	3	0	0	20	20	40	60	100	3
02	CH3TPC01	Fundamentals Chemical Engineering	3	0	-	20	20	40	60	100	3
03	CH3TES05	Fluid Mechanics	3	1	-	20	20	40	60	100	4
04	CH3TBS05	Engineering Mathematics-III	3	1	-	20	20	40	60	100	4
05	CH3TES06	Chemical Engineering Thermodynamics-I	3	0	-	20	20	40	60	100	3
06	CH3TPC02	Chemical Engineering Calculation	3	0	-	20	20	40	60	100	3
PRACTICAL											
01	CH3PPC01	Chemical Engineering Lab	-	-	3	30	-	30	20	50	2
02	CH3PES05	Fluid Mechanics Lab	-	-	3	30	-	30	20	50	2
<b>TOTAL</b>			<b>18</b>	<b>2</b>	<b>6</b>					<b>700</b>	<b>24</b>

IA - Internal Assessment      MSE - Mid Semester Examination      ESE - End Semester Examination

Total Marks - 700      Total Periods - 26      Total Credits - 24

Dr. Chandan Gupta  
Professor  
Chemical Engineering  
Jadavpur University

24/06/16



INSTITUTE OF TECHNOLOGY  
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**SCHEME FOR EXAMINATION**  
**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			Sub Total		
THEORY						IA	MSE	Total		ESE	
01.	CH4THS05	Business Communication and Presentation Skill	3	0	-	20	20	40	60	100	3
02.	CH4TBS06	Numerical Analysis & Computer Applications	3	1	-	20	20	40	60	100	4
03.	CH4TPC02	Chemical Engineering Thermodynamics -II	3	1	-	20	20	40	60	100	4
04.	CH4TPC03	Inorganic Chemical Technology	3	0	-	20	20	40	60	100	3
05.	CH4TPC04	Mechanical Operations	3	0	-	20	20	40	60	100	3
06.	CH4TPC05	Process Instrumentation	3	0	-	20	20	40	60	100	3
PRACTICAL											
01.	CH4PBS03	Numerical Analysis & Computer Applications Lab	-	-	3	30	-	30	20	50	2
02.	CH4PPC02	Mechanical Operation Lab	-	-	3	30	-	30	20	50	2
TOTAL			18	2	6					700	24

IA - Internal Assessment

MSE - Mid Semester Examination

ESE - End Semester Examination

Total Marks - 700

Total Periods - 26

Total Credits - 24

Head of Institute  
Institute of Technology  
Guru Ghasidas Vishwavidyalaya  
Koni, Bilaspur (C.G.)

Head of Department  
Department of Chemical Engineering  
Guru Ghasidas Vishwavidyalaya  
Koni, Bilaspur (C.G.)

**B.Tech. III Semester**

**New Course Introduced**

**CH3THS03: Engineering Economics (3 0 0)**

Unit 1: Basic Concepts and Definitions, Methodology of Studying Economics, Demand and Supply - elasticity, Theory of the Firm and Market Structure, Price and output determinations in different types of market

Unit 2: Public Sector Economics - Welfare Economics, Central and Commercial Banks and their functions, Industrial policies, theory of localization, Weber & Sargent Florence theory, investment analysis-NPV, ROI, IRR, Payback period, SWOT analysis.

Unit 3: Monetary and Fiscal Policy; impact on the economy, Inflation, Business Cycle, Cash (Income) Flow-2,3,4 Model.

Unit 4: Business Forecasting - Elementary techniques, Cost and Revenue Analysis, Break Even Analysis.

Unit 5: Indian Economy; Urbanization, Migration, Unemployment-Poverty, Regional Disparities, Unorganized Sectors- Role of Plans, Reforms-Post Independent period.

**Text Books:**

1. Mankiw Gregory N (2002), Principles of Economics, Thompson Asia
2. V. Mote, S. Paul, G. Gupta(2004), Managerial Economics, Tata McGraw Hill
3. Misra, S.K. and Puri (2009), Indian Economy, Himalaya
4. PareekSaroj (2003), Textbook of Business Economics, Sunrise Publishers

**Reference Books:**

1. Kapila U. Indian economy since Independence. Academic Foundation, New Delhi
2. Misra, S. K. and Puri V. K. Indian Economy - Its Development Experience. Himalaya Publishing House, Mumbai
3. Dutt R. and Sundharam K. P. M. Indian Economy, S. Chand & Company Ltd., New Delhi.
4. Mathur R. Indian Economic Policy and Reform. RBSA Publisher, Jaipur
5. Jalan B. Indian Economic Policy. Penguin Books Ltd
6. Government of India, Economic Survey (Annual), Economic Division, Ministry of Finance, New Delhi.



CH4TBS06: Numerical Analysis & Computer Applications ( 310 )

5%

UNIT - I Approximations and Errors in Computation: Errors and their analysis, Types of errors Curve fitting : Method of Least squares , fitting of a straight line , fitting of an exponential curves , polynomial fit : Non linear Regression ( second degree parabola ) , Least Square Approximation , Method of moments.

Few contents removed from syllabus  
General error-formula, errors in numerical

UNIT - II Numerical Solution of Algebraic and Transcendental Equations: Graphical method bisection Method, Secant Method, Regula-falsi Method, Newton Raphson Method, Iteration Method Solution of a system of simultaneous linear algebraic Equations Direct method: Gauss elimination Method, Gauss Jordan method, Iterative methods Jacobi Iterative Method, Gauss Seidel Iterative method.

Successive over relaxation method

UNIT - III The Calculus of Finite Differences: Finite differences, Difference formula, operators and relation between operators. Inverse Operator, Interpolation with equal intervals: - Newton's forward and backward interpolation formula. Central difference interpolation formula: - Gauss's forward and backward interpolation formula, Sterling's formula Bessel's formula, Laplace - Everett's formula, choice of interpolation formula. Interpolation with Unequal intervals: - Lagrange's interpolation Newton's difference formula, inverse interpolation,

UNIT -IV Numerical Differentiation and Integration: - Numerical Differentiation Newton's forward and Backward difference interpolation formula. Maxima and Minima of a Tabulated function. Numerical Integration : - Newton-cote's quadrature formula Trapezoidal rule , Simpson's (1/3)rd and (3/8) th rule , Boole's rule, Weddle rule , Difference Equations :- Definition, order and degree of a difference equation . Linear difference equations, Difference equations reducible to Linear form . simultaneous difference equations with constant coefficients

Applications

UNIT - V Numerical solution of ordinary differential equation : Taylor series method , Picard's Method , Euler's method, Modified Euler method Runge's method Runge Kutta method . Numerical solution of partial differential Equations : Classification of P.D.E. of the second order Elliptic equations , solution of Laplace equation , solution of Poisson's Equation, solution of elliptic equations by Relaxation method parabolic equations .

Books Recommended :

1. JAIN & IYNGAR Numerical Methods for Scientific and Engineering Computations.
2. RAO G.S. Numerical Analysis.
3. Grewal B S Numerical Methods In Engineering and Science.
4. Das K K Advance Engineering Methods.
5. Rajaraman V. Computer Oriented Numerical Methods.

Agreed and Accepted  
C.G. 2



New Course Introduced

**CH3TPC01: Fundamentals of Chemical Engineering (3 0 0)**

Introduction; Units and dimensions, basic laws, unit operations and unit processes; Physico-chemical calculations: Material and energy balance for different unit operations and unit processes; Fluid flow and flow measurement: Nature of fluid, viscosity, friction factor, flow through porous media, fluidization, flow measuring devices; Heat transfer: Modes of heat transfer, calculation of heat transfer coefficient, heat exchangers and evaporators; Mass transfer: Transfer mechanism, mass transfer coefficient, introduction to mass transfer operations viz. gas absorption, distillation, leaching and drying, stage and continuous contactors; Chemical kinetics: Rate equation, catalysis, type of reactors; Chemical process instrumentation: Elements of instruments, static and dynamic characteristics, dynamic response of process instruments, recording, indicating and signaling instruments; Pollution from chemical industries and its abatement: Solid, liquid and gaseous effluents from chemical industries and their abatement.

Text / References :

1. W. L. McCabe, J. C. Smith and P. Harriott, Unit Operations of chemical Engineering, McGraw-Hill, Inc., Sixth Edition, 2005
2. J. M. Coulson, J. F. Richardson, J. R. Backhurst and J. H. Harker, Chemical Engineering, Vol. 1 and 2, Pergamon Press, Fourth Edition, 1990.
3. G. T. Austin, Shreve's Chemical Process Industries, McGraw Hill Book Co., Fifth Edition, (Latest)



B.Tech. IV Semester

New Course Introduced

CH4THS05: Business Communication and Presentation Skill (30.0)

Unit I: Business communication covering, Role of communication in information age; concept and meaning of communication; skills necessary for technical communication; Communications in a technical organization; Barriers to the process of communication

Unit II: Style and organization in technical communication covering, Listening, speaking, reading and writing as skills; Objectivity, clarity, precision as defining features of technical communication; Various types of business writing: Letters, reports, notes, memos; Language and format of various types of business letters; Language and style of reports; Report writing strategies; Analysis of a sample report

Unit III: Communication and personality development covering, Psychological aspects of communication, cognition as a part of communication; Emotional Intelligence; Politeness and Etiquette in communication; Cultural factors that influence communication; Mannerisms to be avoided in communication; Language and persuasion; Language and conflict resolution;

Unit IV: Language Laboratory emphasizing Listening and comprehension skills; Reading Skills, Sound Structure of English and intonation patterns;

Unit V: Oral Presentation and professional speaking covering, Basics of English pronunciation; Elements of effective presentation; Body Language and use of voice during presentation; Connecting with the audience during presentation; Projecting a positive image while speaking; Planning and preparing a model presentation; Organizing the presentation to suit the audience and context; Basics of public speaking; Preparing for a speech;

Text books:

1. Fred Luthans, Organizational Behaviour, McGraw Hill
2. Lesikar and petit, Report writing for Business
3. M. Ashraf Rizvi, Effective Technical Communication, McGraw Hill
4. Wallace and masters, Personal Development for Life and Work, Thomson Learning

Reference books :

1. Farhathullah, T. M. Communication skills for Technical Students
2. Michael Muckian, John Woods, The Business letters Handbook

Agarwal  
Chauhan  
Chauhan