BRIDGE COURSE SYLLABUS

B. Tech 1st Year

2022-23

Preface

The purpose of a Bridge Course is to help students transition from high school to college by developing their academic skills and knowledge. Bridge courses may also provide additional support through tutoring or mentoring programs. Taking a bridge course can help students better understand the expectations of their new academic level and make a smooth transition into their new program. Bridge courses can also help students to build confidence and develop new skills that will be useful in their future studies.

A student joining engineering program after 10+2 require reinforcement of fundamental concepts. This syllabus is designed to bridge the gap between the school syllabus and the level needed to understand their applications to engineering concepts

D. Bhattacherjee

Dr. Debasmriti Bhattacherjee

Course coordinator, Bridge Course, AY 2022-23

Syllabus
PHYSICS-BRIDGE COURSE

1. Classical Mechanics: 01
Rotational motion, Torque and angular momentum, Principle of moments (Moment ofInertia), Radius of Gyration

2. Mechanical Properties of Solids and Fluids: 01
Elastic behaviours of solids, Hooke's Law, Young's Modulus, Shear Modulus, Bulk Modulus, Applications of Elastic behaviours ofmaterials

3. Waves and Oscillations: 01
TYPES OF WAVES, Superposition of Waves, Reflection and Refraction, Standing Wavesand Normal Modes

4. Wave Optics: 01
Interference of light, Photons

5. Semiconductor Electronics: 02
Classification of metals, conductors and semiconductors, FermiLevel, Intrinsic Semiconductor, Extrinsic Semiconductor, p-n junction, SemiconductorDiode, Half-Wave Rectifier, Full-Wave Rectifier, Zener diode, Photodiode, Light emittingdiode, Junction Transistor

6. Atomic and Nuclear Physics: 01
Atomic Theory by J. J Thompson, Atomic Theory by Ernest Rutherford, AtomicTheory by James Chadwick, Discovery of the Neutron, Bohr's Postulates

Banani Adhikari (Das)
01.07.2022
Dr. Banani Adhikari (Das)
Subject Coordinator,
Physics

D. Bhattacherjee
Dr. Debasmriti Bhattacherjee
Course Coordinator,
Bridge Course AY 2022-23

8/07/2022
Dr. Jayanta Dutta
HOD, DESH

Head Of The Department
Department Of Engineering-
Sciences & Humanities
Siliguri Institute Of Technology

Department of Engineering Sciences & Humanties,
Chemistry Section
Bridge Course Curriculam & Lecture Plan: Odd Sem 2022

Module 1: Coordination Chemistry		
Lecture 1	Importance of coordination chemistry, Types of complexes, Classification of Ligands.	
Lecture 2	Crystal Field Theory to explain nature of bonding in octahedral complexes.	
Module 2: Organic Chemistry		
Lecture 3	Introduction to Reaction Mechanism: Carbocations: Generation, stability, reactions and applications in synthetic organic chemistry, Exercise.	
Lecture 4	Free Radicals: Generation, stability, examples and applications in synthetic organic chemistry, Exercise.	
Module 3: Thermodynamics and Equilibrium		
Lecture 5	Basic Concepts of Thermodynamics & 1st Law of Thermodynamics.	
Lecture 6	Concepts of Equilibrium & Acids Base Theory.	
Module 4: Electrochemistry		
Lecture 7	Electrochemical Cell.	
Lecture 8	Ionic Conductance.	
Module 5: Chemical Kinetics		
Lecture 9	Reaction Rate, Order and Molecularity of Reactions.	
Lecture 10	Differential & Integrated Rate Equation.	

Dr. Susanta Kr. Saha
Subject Coordinator
Chemistry

Dr. Debarsmriti Bhattacharjee
Course Coordinator, Bridge Course AY 2022-23

Dr. Jayanta Dutta
HOD, DESH

Head Of The Department
Department Of Engineerir
Sciences & Humanities
Siliguri Institute Of Technolo

B. Tech 1ˢᵗ Semester (2022-23)
Bridge Course
Mathematics

Day	Module	Sub Topic	Methodology	Hour
1	Basics of Mathematics	Mock Test	Test will be conducted in Pen and Paper to identify the learners grasp on the subject	1
2	1	Set, Relations and Mapping	Lectures and Practice	1
3	2	Differential and Integral Calculus	Lectures and Practice	2
4	3	Matrices and Determinants	Lectures and Practice	2
5	4	Differential Equations	Lectures and Practice	2
6	Final Assessment		Mock Test based on all the 4 Modules to identify the learners improvement through the course.	1

D. Bhattacherjee

Dr. Debasmriti Bhattacherjee

Subject Coordinator(Mathematics)
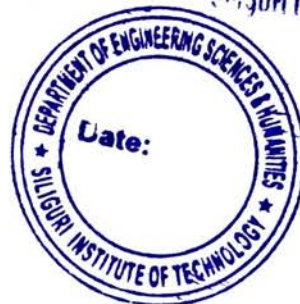
D. Bhattacherjee

Dr. Debasmriti Bhattacherjee

Course Coordinator

Dr. Jayanta Dutta

HOD- DESH

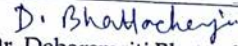Head Of The Department
Department Of Engineering.
Sciences & Humanities
Siliguri Institute Of Technolo.

Date:

B.Tech 1st Semester (2022 - 23)
Bridge Course
English and Communication Skills Course Module

	Module	Sub topic	Methodology	Day /Hour
1	Grammar: Correction of Errors in Sentences	Mock Test	Mock Test on Sentence corrections - The test helps to identify the learner's grasp on functional grammar and the use of correct English.	1
2	Grammar Practice: Correction of Errors in Sentences	Sentence errors, Parallelism and Subject – verb agreement	Lecture and Practice	2
3	Reading Comprehension	Strategies for Reading Comprehension (Practicing Non Technical Texts)	Lecture and Practice	1
4	Reading Comprehension	Comprehension (Practicing Technical Texts)	Lecture and Practice	1
5	Communicate in Person (The Power of Face to Face Connections)	Giving a short introduction to the class	Lecture on Pronunciation, voice modulation and clarity, body language while presenting and assessment of learner's speaking skills	1
6	Final Assessment		Mock Test on Sentence corrections and Comprehension - The test helps to identify the learner's improvement through the course	1

Mr. Rajeeb Chetri
Subject Coordinator (Humanities)

Dr. Debarsmriti Bhattacharjee
Course Coordinator

Dr. Jayanta Dutta
HOD - DESH
Head Of The Department
Department Of Engineering.
Sciences & Humanities
Siliguri Institute Of Technol...

Bridge Course for Newly Admitted B.Tech 1st Year 1st Semester Students
(AY 2022-2023)
Introduction to Programming Course Module

Day	Topics
Day – 1	Digital Electronics, Number system, Boolean Algebra, Conversion, Complement, Logic expression, ICs, Gates, Multiplexer, Flip-flops
Day – 2	Computer organization and architecture, CPU, ALU, Control unit, Instruction set, Memory, File and Disk operation, OS and its functionality
Day – 3	Data and Information, Information store and process, Algorithm, Flow chart, Basics of Programming, Evolution, Procedural vs. Object oriented, Coding, Industry standards
Day – 4	Database concept, File system vs. Database, DBMS, Applications and examples, Data store and retrieve, Industry applications, Data mining, Big Data
Day – 5	Networking, Why it is required, Data sharing, Applications, Protocols, E-mail, Social media, Devices, LAN, MAN, WAN, Wired vs. Wireless communication, Mobile communication
Day – 6	Advanced topics, Future and latest trends of CS-IT, Cloud, Fog, IoT, Cyber world, Security, AI and Robotics, Cryptography, E-commerce

Mr. Anupam Mukherjee
HOD, CSE

Dr. Debasmriti Bhattacharjee
HOD, DESH