

Netaji Subhash Engineering College, Kolkata

5.1.3 Report for Capability enhancement and development schemes

6. Bridge Courses Report

Netaji Subhash Engineering College

DEPARTMENT OF BASIC ENGINEERING SCIENCES

Bridge Course for 1st Year B Tech students, 2017-18

The strength of our relationship with the students is our ability to gauge their strengths and weaknesses. Induction Programmes and Bridge courses conducted by the department during the academic year are an effort on our part to fill-in the chasm that exists between the shared knowledge of students at the entry-level and the course requirements. Bridge course helps students to open up, think creatively and become responsible and independent students. The objective of the Bridge course is to demystify what is expected of students in Pre University-level classes and to provide adequate foundation in the core applied science subjects and English limited to moderate level so that students do not face any difficulty when the classes commence. During this interaction of few days with the faculty, the students will come out of their hesitation and it will be the best platform for the students to interact with the faculty members, making it responsible for them to build strong relationships with faculty, advisers and other students.

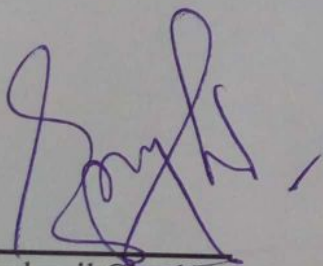
The following faculty members conducted the classes to fill up the gaps between the knowledge of school and college:

Total 701 students who took admission this year has participated in this programme.

This course was conducted from 24th July to 11th August, 2017.

The following faculty members conducted the classes to fill up the gaps between the knowledge of school and college:

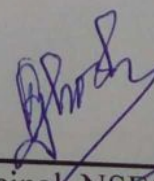
Prof Arup Dasgupta; Prof Payel Das; Prof Amrita De; Prof Saswati Das; Prof Sreya Pal; Prof Sabyasachi Bagchi; Prof Krisnendu Bhattacharya; Prof Subrata Kabiraj; Prof G K Das Mahapatra; Prof Chayan Guha; Prof Arjama Kundu; Prof Madhusudan Nandy.



(Dr. Indranil Ghosh)

(HOD, BES)

Head of the Department
Basic Engineering & Science
Netaji Subhash Engineering College
Techno City, Garia,
Kolkata - 700 152



Principal, NSEC



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Bridge Course for 1st Year B Tech students, 2016-17

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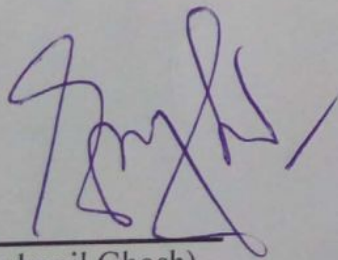
The following faculty members conducted the classes to fill up the gaps between the knowledge of school and college:

Total 699 students who took admission this year has participated in this programme.

This course was conducted from 1st August to 5th August, 2016.

The following faculty members conducted the classes to fill up the gaps between the knowledge of school and college:

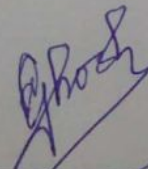
Prof Arup Dasgupta; Prof Payel Das; Prof Amrita De; Prof Saswati Das; Prof Sreya Pal; Prof Sabyasachi Bagchi; Prof Krisnendu Bhattacharya; Prof Subrata Kabiraj; Prof G K Das Mahapatra; Prof Chayan Guha; Prof Arjama Kundu; Prof Madhusudan Nandy.



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Bridge Course for 1st Year B Tech students, 2015-16

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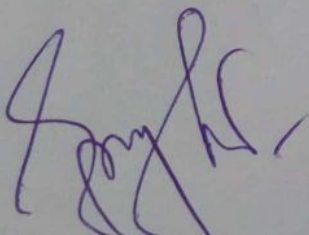
The following faculty members conducted the classes to fill up the gaps between the knowledge of school and college:

Total 712 students who took admission this year has participated in this programme.

This course was conducted from 17th August to 21st August, 2015.

The following faculty members conducted the classes to fill up the gaps between the knowledge of school and college:

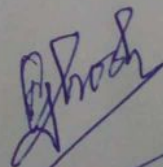
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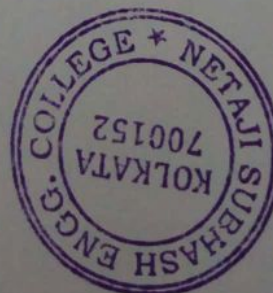
(Dr. Indranil Ghosh)

(HOD, BES)

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Basic Engineering & Science
Netaji Subhash Engineering College
Techno City, Garia,
Kolkata - 700 152



Principal, NSEC



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Bridge Course for 1st Year B Tech students, 2014-15

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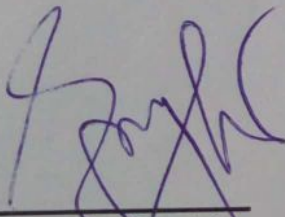
The following faculty members conducted the classes to fill up the gaps between the knowledge of school and college:

Total 706 students who took admission this year has participated in this programme.

This course was conducted from 18th August to 22th August, 2014.

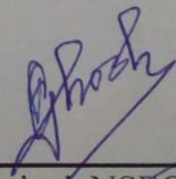
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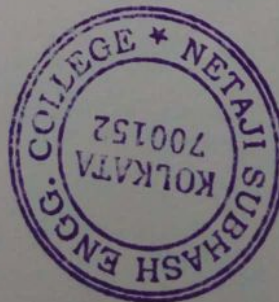


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(HOD, BES)



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BRIDGE COURSE:

A "BRIDGE" between "PHYSICAL SCIENCE" and "Engineering" Physics

Before the onset of the exact curriculum, a Freshers' Induction Programme is conducted for the B. Tech First year students. An integral component of this Induction programme is Bridge course aimed at mending the gap between the school education and technical education. It is symbiotic processes which acts primarily as a tool for assessing the heterogeneous needs of the students arriving from different educational, social background as well as orient them with the professional and technical norms and requirements.

Time and effort is exercised to analyse and rectify some critical lacunas. The modules specify some crash courses in Physics, helping the students in their areas of grey shades, so when the normal curriculum starts after the induction program, the student has overcome his/her lacunas substantially. This also helps the Faculty members in analyzing the needs and gaps and therefore in framing and determining the delivery mode of the curriculum for each stream in each academic session.

- **Introduction to Mechanics:-**

Newton's First Law of Motion , Inertia , Linear Motion , Newton's Second Law of Motion , Newton's third Law of Motion , Impulse, Friction and Inertia , Energy, Conservation of Energy , Momentum, Conservation of Momentum(3 hrs)

- **Properties of Matter:-**

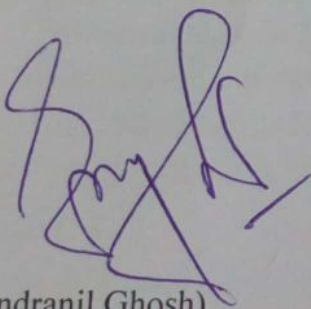
Pressure, Buoyancy, Archimedes' Principle, Pascal's Principle, Surface Tension, Tension and Compression (2 hrs)

- **Electricity and Magnetism:-**

Electrostatics, Electric Current, Magnetism, Electromagnetic Induction, Basic circuit component, AC and DC fundamentals, Analog and Digital meters(2hrs)

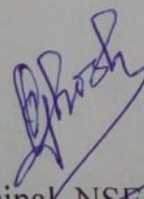
- **Modern Physics:-**

Quantum Idea, Application (Laser, Fibre Optics, X rays), Solid state electronic components, Diodes, LEDs, Solar Cell, Moving towards NANO. (3 hrs)



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A "BRIDGE" between "CHEMICAL SCIENCE" and "Engineering" Chemistry

A bridging course is a short, intensive course designed to assist students who may not meet the assumed knowledge requirements of a course, or who are not confident with their preparation for university study. Bridging courses teach to an introductory level and may assist in narrowing the gap between high school and university studies. Most undergraduate degrees have 'assumed knowledge', and if you don't have the assumed knowledge you might find it difficult to manage your studies. Bridging courses are also an excellent refresher if you are returning to study after a period of absence. NSEC offers bridging courses in chemistry as a part of induction program.

This course runs for 10 hrs

- Elements, atoms, the periodic table, Bonding and the shape of molecules, Intermolecular forces. (2 HRS)
- Mole calculations/conversions, Reaction stoichiometry and yield, Relating moles to formulae (percentage composition and empirical formulae). (2 HRS)
- Acid base and pH. (2 HRS)
- Application of chemical thermodynamics and chemical equilibrium (2 HRS)
- Organic and industrial chemistry (2 HRS)

Outcome of the course

The concepts developed in this course will aid in quantification of several concepts in chemistry that have been introduced at the 10+2 levels in schools. Technology is being increasingly based on the electronic, atomic and molecular level modifications. Overall outcome of the Bridging course in Chemistry under the Induction program for 1st year B. Tech course are listed below.

1. Acquire sufficient knowledge in basic concept of atoms, molecules and different types of molecular forces.
2. Understand basic concept of mole and reaction stoichiometry.
3. Acquire preliminary ideas about acid, base, ionic equilibrium and pH scale.
4. Demonstrate knowledge and understanding of the thermodynamics principles and chemical equilibrium and can apply these in the field of electrochemistry.
5. Understand and can apply basic concept of organic chemistry.
6. Acquire preliminary knowledge in industrial chemistry.

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A "BRIDGE" between "School" Mathematics and "Engineering" Mathematics

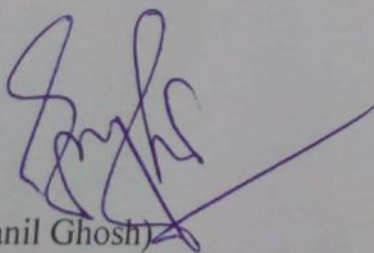
A large number of students enter in different engineering disciplines after plus two classes. In spite of their good academic record and having good marks in Engineering Entrance examinations, students must have virtually stopped studying after the month of April/May.

Now after the admissions when classes of B.Tech commence, students may face problems due to this discontinuity. Some of the students may find it difficult to cope up with the pace of teaching. So their attention to concepts and understanding of the subjects may be challenged in the very beginning itself. This can lead to poor performance in first year end semester examination and also subsequent exams in the higher semesters.

In order to overcome these difficulties, Bridge courses are conducted during the start of every academic year. The Bridge Course is aimed to act as a buffer for the new entrants, with an objective to provide adequate time for the transition to hardcore engineering courses. Students will be groomed for the foundation subjects like Mathematics & elements of Engineering during these sessions. This gives them a breather, to prepare themselves better before the first year engineering classes commence. By the interaction with the faculties and classmates, the students will be equipped with the knowledge and the confidence which is very much necessary to take their first year classes successfully.

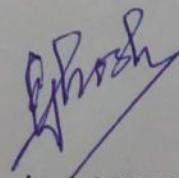
The college conducts the Bridge course giving stress on selected topics from Engineering Mathematics as foundation to the first year BTech.

- **Matrices and Vectors:** physical representation, matrix inverse, operations on vectors (2 Hours)
- **Series and sequence, Convergence, Divergence, Binomial theorem for fractional index** (2 Hours)
- **Integral Calculus:** Integration: By parts, using partial fractions (1 Hour)
- **Differential Calculus:** limit, continuity, chain rule, partial derivative (1 Hour)
- **Differential Equation:** ODE/PDE: formation, linear, non-linear, homogenous, non-homogenous, constant coefficients, variable coefficients (4 Hours)



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**BRIDGING THE GAP BETWEEN "ENGLISH" AND "TECHNICAL
COMMUNICATION"**

OBJECTIVE:

The goal of **grammar** instruction is to enable students to use English for specific purpose. Instructors therefore teach grammar forms and structures in relation to meaning and use for the specific communication tasks that students need to complete.

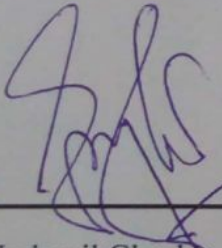
The purpose of induction to the **EFFECTIVE WRITING SKILLS** is to gain an effective, smarter and quicker communication technique in the global professional world.

OUTCOME:

- Communicate an idea in a series of logically connected sentences.
- Able to work with correct choice of words and sentences.
- Develop vocabulary and basic grammatical conception.
- Appropriate choice of words for desired effective communication.
- Gain proficiency in professional field.
- Acquiring proper application perception.

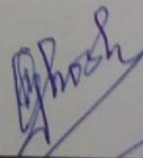
GRAMMAR & VOCABULARY- Miscellaneous exercises on spotting and correcting errors, use of modals, prepositions, articles, correct usage of tense and subject-verb agreement. **(5 hrs)**

EFFECTIVE WRITING SKILLS- : Comprehension, précis, summary, note-making (developing from key words), drafting notice & letter & paragraph writing. **(5 hrs)**


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