1. **Course Name: Applied Chemistry CHY 101**
2. **Course Structure:** 3L: 1T: 1P (5 credit course)
3. **Instructors:** Parthapratim Munshi, Debdas Ray, Gouriprasanna Roy, Subhabrata Sen (course coordinator)
4. **Course Evaluation:** This course shall consist of a lecture and a lab component. Grading in the lecture will be based on a 4 mid-term and a final examination.
5. The student needs to achieve 40% in both the theory and lab separately to pass the course. To pass the course you will have to pass the lab and lecture portion separately and achieve 40% independently in each part. To get an A, you must score 90% or higher.

These parts will be weighted as 40% for lab and 60% for lecture

For the lecture portion there will an exam after each unit. There will be **NO** make- up exams except in the case of illness which is proved by a valid doctor’s note. There will be one final exam. There may be several pop quizzes taken during any class hour.

1. The first 15 min of most of the labs will be a quiz which must be taken before you may proceed with the designated experiment for the week.
2. **Course Outline:**
3. **1. Unit 1:** Atomic structure, Periodic table, Quantum Chemistry, Spectroscopy ( *12 lectures, offer by Dr. Gouriprasanna Roy*)
4. **2. Unit 2:** Thermodynamics, Energy and Kinetics (*12 lectures, offer by Dr. Parthapratim Munshi*)
5. 3. **Unit 3**: Introduction to organic chemistry, functional group and physical properties of organic compounds, substitution and elimination reaction and stereochemistry (*12 lectures, offer by Dr. Subhabrata Sen*)
6. 4. **Unit 4**: Photosynthesis, electrochemical cells and batteries, water corrosion, nuclear magnetic resonance and mass spectroscopy (*12 lectures, offer by Dr. Debdas Ray)*

**Texts**:

Unit 1

* Concepts of Engineering Chemistry: A. Srivastava and N.N. Janhavi
* Engineering Chemistry: Jain & Jain
* Other reading materials will be assigned as and when required.

Unit 2

1. Physical Chemistry A Molecular Approach by [McQuarrie, Donald A. Simon, J.D](http://library.snu.in/cgi-bin/koha/opac-search.pl?q=au:McQuarrie,%20Donald%20A.). (5 copies available in the library)
2. Engineering Chemistry by [Palanna, O. G](http://library.snu.in/cgi-bin/koha/opac-search.pl?q=au:Palanna,%20O.%20G.)(2 copies available in the library)

Unit 3

Handouts

Unit 4

 Engineering Chemistry; by P.C. Jain and Monika Jain

NMR spectroscopy basic principles, concepts and application, Gunther, Harald

Fundamental on molecular spectroscopy, Banwell Collin N, Mccash, Elaine M, Hiranya K Chaudhury (Adpt. By)

**TA requirement**: 2

**Lab (dates will be inserted once the academic calendar is out)**:

|  |  |  |
| --- | --- | --- |
| 1 | 1st week | No Lab this week |
| 2 | 2nd  | Meet with students/ Introduce to lab/ Grading scheme |
| 3 | 3rd  | Safety Rules /Quiz -  Displaying Data Graphically |
| 4 | 4th  | Sugar Content of Common Drinks |
| 5 | 5th  | Stoichiometry of H2O2 decomposition |
| 6 | 6th  | Total Hardness of Water/  Technique Grade |
| 7 | 7th  | Make-up Week |
| 8 | 8th  | Determination of  Conc. of an Unknown colored soln. |
| 9 | 9th  | Determination of  Conc. of an Unknown colored soln. |
| 10 | 10th  | Recycling Al foil  |
| 11 | 11th  | Synthesis of Nylon |
| 12 | 12th  | Analysis of Common Functional Groups  / Technique Grade  |
| 13 | 13th  | Synthesis of aspirin |
| 14 | 14th  | Analysis of aspirin |
| 15 | Final week | Make – up week |

**Assessment**

 Lab: 40%

 Lecture: 60% (12% each for 4 unit exams and 1 final exam)