

BS192

Undergraduate Science Laboratory: Chemistry Course policy 2024-25; Semester 1

Instructors:

Chemistry Section: Dr. Partha Pratim Roy (Email: partha.roy@iitgn.ac.in)
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1. Tentative Schedule:

All Lab sessions are scheduled between 2:00 pm to 5:00 pm

Section	Lab Experiment	Report submission Deadline
1	Tuesday*	Tuesday (12 pm, Next week)
2	Wednesday*	Wednesday (12 pm, Next week)
3	Thursdays	Thursday (12 pm, Next week)
4	Fridays	Friday (12 pm, Next week)

Sl. No.	Experiment	Batch 1	Batch 2
1.	Introductory class: Safety, grading policy, calibration experiment and Synthesis of a commercial polymer (Nylon 6,6)	7 - 10 Jan	18 - 21 Feb
2.	Fingerprint detection	15-18 Jan	22 Feb, 25 Feb, 27 - 28 Feb
3.	Electrolysis of water to produce hydrogen	21- 24 Jan	18- 21 March
4.	Removal of organic pollutants from water using light	28-31 Jan	25 -28 April
5.	Fluorescence, and Chemiluminescence through the production of a biphasic glow stick	4-7 Feb	1- 4 April

*14th Jan's lab (Tuesday) is shifted to 18th Jan 2025 (Saturday)

*26th Feb's lab (Wednesday) is shifted to 22nd Feb, 2025 (Saturday)

2. Grading policy

(i) Lab conduct and report: 20/experiment. There will be 5 experiments. Overall weightage: 70%

(ii) 1 quiz on all 5 experiments: 30%

*Date will be announced later

The lab conduct will include the following aspects:

1. Following appropriate safety protocol.
2. Timely start and completion of the experiment
3. Active participation in the lab work

Please note the following:

- (i) Late submission in Google Classroom: -25% from the lab report marks
- (ii) Anyone arriving after 2:05 pm: -1 point
- (iii) Anyone arriving after 2:10 pm: -2 points
- (iv) Anyone arriving after 2:15 pm: -5 points
- (v) Anyone arriving after 2:20 pm: Will not receive any point in the lab conduct part.
- (vi) The safety protocol is given in Annexure-1. Any deviation will lead to negative marking [-1 point for first misconduct, -3 points for 2nd misconduct, will not be allowed to continue after 2nd].

N.B. Do not miss any class/experiment unless it's an emergency (valid proof is required for that). In such a scenario, only one experiment will be allowed to perform in buffer classes.

The Lab report:

Each group will submit a combined report. The contribution of each group member should be included and endorsed by all members. The details on the format of the report are given below.

Annexure-1

GENERAL CHEMISTRY LABORATORY SAFETY

ATTIRE: A chemistry laboratory is a place of doing, learning, and discovery. However, due to the nature of laboratory work, it can also be a place of danger if proper precautions are not taken.

- i) Use protective eyewear whenever required
- ii) Closed-toe shoes must be worn in the lab. Avoid loose-fitting clothes.

HANDLING CHEMICALS & EQUIPMENTS:

- i) Know what chemicals you are using. It is advisable to use the Material Safety Data Sheet (MSDS) for the precise chemical nature of many commercial chemicals.
- ii) Exercise caution when using flammable reagents.
- iii) Pipette carefully. Use burettes whenever necessary.
- iv) Always pour acids into water, and not the other way round.
- v) Excess reagents should not be returned to stock bottles. Dispose of excess reagents properly in the waste solvent bins.
- vi) Follow instructions carefully while using laboratory equipment.
- vii) Beware, hot glass looks just the same as cold glass.

CONDUCT:

- i) Eating & drinking are strictly prohibited in the laboratory.
- ii) Listening to songs on electronic devices (e.g. mobile phone, i-pod) is NOT allowed.
- iii) Keep your desk/work area clean. Put paper trash and broken glass in the dustbin.
- iv) Avoid spills. If you spill something, clean up the area immediately.
- v) Keep the area around laboratory equipment clean and free of trash paper.
- vi) Clean your glassware and desk before you leave the lab.
- vii) Always wash your hands thoroughly before leaving the lab.

Report writing

The lab report should be prepared in a manuscript format. Please use the IEEE journal article template. The report must include the following sections:

1. Introduction:

In this section, the students will first introduce what experiment they have performed. It is followed by a brief description of the experiment, the important results, and the conclusion e.g. “We have determined the rate of acidic hydrolysis of sucrose solution in acidic water. We have utilized the optical activity to gauge the reaction rate in this experiment. Sucrose (specific rotation +66.5°) hydrolyzes to fructose (specific rotation -92 °) and glucose (specific rotation +52 °). So the overall optical rotation of the solution continuously changes from +ve to -ve rotation as the reaction proceeds. Here, we have measured the optical rotation of the solution (the reactant) at various times after adding acid. We found the rate of reaction is $x \text{ hour}^{-1}$. This data is within 5% error limit of the reported data.”

2. Experimental details:

In this section, write how the experiment was performed in detail. Mention the name of any equipment, materials, and instruments that have been used during the experiment.

3. Results

In this section, include the data you have collected. The data can be represented in tabular form. Provide all the detailed calculations and analysis.

4. Conclusion

In the final section, mention what is the final verdict of your experiment. Make sure to explain in detail how the results help you to reach the conclusion.

5. Author contributions: Contribution from individual authors during the experiment and preparation of the report should be included here.

Do not copy from the lab manual or from your friend. Write the introduction in your own language. The names of the students(s) will be reported to SSAC in case of any plagiarism found in the reports.