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## Department of Chemical Sciences

Graduate Course on

### Organic and Inorganic Chemistry

#### How to plan synthesis of new molecules?

This course will highlight tools and methodologies that aid in sculpting molecules. I will provide a comprehensive insight into advanced organic and organometallic chemistry starting with a brief overview of basic concepts and then delve into details of reactions and principles.

#### Course Contents

- How to introduce new functionalities into a molecule? Functional group interconversions and bio-conjugation reactions
- Forming new bonds: Addition and reduction reactions
- Tracking and trapping reactive intermediates
- Methodologies for making receptors and ligands
- Basics of organometallic chemistry
- How to design new molecules: Principles of retrosynthetic analysis and multistep synthesis
- Special Topics on carbon-hydrogen bond activation, catalysis, light-activated reactions, supramolecular chemistry, and routes from synthetic biology to new chemistry.

#### Prescribed Text:

1. Advanced Organic Chemistry, Francis A. Carey and Richard J. Sundberg, Part B: Reactions and Synthesis
2. The Organometallic Chemistry of the Transition Metals, Robert H. Crabtree, 5<sup>th</sup> Edition

(For detailed course content, see Courses in the webpage of the Chemistry Subject Board)

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**Venue:** Lecture room AG-80 (Zoom)

**Days:** Tuesdays; Time: 11 hr to 12:30 hr

Fridays; Time: 9:30 hr to 11:00 hr

*The first lecture starts on September 3<sup>rd</sup>, 2021.*