

AMAN UPADHYAY

Fourth Year Dual Degree, Department of Biological Sciences and Bioengineering, Indian Institute of Technology (IIT), Kanpur
amanup@iitk.ac.in | aman161upadhyay@gmail.com

Educational Qualifications

JULY 2014-Present	M.Tech. in BIOLOGICAL SCIENCES AND BIOENGINEERING B.S. in CHEMISTRY (Dual) Indian Institute of Technology, Kanpur CPI: 8.63/10
APRIL 2012 – MARCH 2013	Higher Secondary Certificate Examination (12th GRADE) [MSBSHSE] Percentage: 79.7%
APRIL 2010 – MARCH 2011	Senior Secondary Certificate Examination (10th GRADE) [MSBSHSE] Percentage: 92.2%

Scholastic Achievements

- All India Rank 4142 in JEE ADVANCED 2014 among 150,000 candidates.
- Semester Performance Index (S.P.I) 10/10 in 4th and 7th semesters among 1100+ students.
- Recipient of **INSPIRE Fellowship** awarded by DST to students inclined to pursue a career in scientific research.
- 99.25 percentile in JEE MAINS 2014 among 1,400,000 candidates.
- Rank 25 (99.975 percentile) in Maharashtra Talent Search Exam 2010 among 100,000 candidates.
- All India Rank 1179 in National Science Olympiad 2009 organized by Science Olympiad Foundation

Research Projects

- **Investigating the presence of unknown noncovalent interactions in proteins** *July 2017 - Present*
Advisor: **Prof. R. Sankararamakrishnan**, Dept. of Biological Sciences and Bioengineering, IIT Kanpur
 - Analyzed more than **8000 Protein structure's Data** (PDB) to investigate noncovalent interactions.
 - Studied the pattern of occupancy factors and correlated it to the stability of a particular protein.
 - Currently **investigating the presence of selenium hydrogen bonds** in proteins using protein visualization tools and Quantum Mechanical calculations.
- **Luminescent Lanthanide Nanoparticles for Bioimaging Applications** *July 2016 - April 2017*
Advisor: **Prof. A.K. Patra**, Dept. of Chemistry, IIT Kanpur
 - Synthesized a therapeutic lanthanide complex linked with organic ligands having thiol groups.
 - Synthesized and studied thiophilic **gold nanoparticles** to which the Ln(ligands) were covalently bonded.
 - The nanoparticle-lanthanide complex couple acted as a **therapeutic and diagnostic(theranostic) drug**.
 - Tested successfully the **diagnostic bioimaging applications** of the theranostic drug synthesized.
- **Application of electroceuticals to treat optic neuritis** *August-November 2017*
Advisor: **Prof. D.S. Katti**, Dept. of Biological Sciences and Bioengineering, IIT Kanpur
 - **Designed** and proposed a probable cure for optic neuritis (a condition in Multiple Sclerosis) by replacing the damaged optic nerves by an **electroceutical** device which works as an **artificial neuron**.
 - Received an **A grade for the innovative ideation**, insights, research, **term paper** and presentation.
- **Normalization of Religious Ethics** *January-April 2017*
Advisor: **Prof. Vineet Sahu**, Dept. of Philosophy HSS, IIT Kanpur
 - Awarded an **A grade** for researching religious practices', studying their moral implications and their relevance in today's world.
 - Suggested a possibly **better morality model** based on Ayn Rand's work.
- **The How's and Why's of The Great Economic Depression, 1929** *May-July 2015*
Business Club, IIT Kanpur
 - Researched the complications associated with the Classical and the Keynesian **Macroeconomics**.
 - Made **insights** and inferences as to how such **recession** and **depression** periods can be avoided in future.

Technical skills

- Programming Languages: C | C++ | Python | R | MATLAB | Bash | Ruby | FORTRAN | HTML | SQL
- Softwares/Platforms: MS Excel | LATEX | Adobe Photoshop | GitHub | PyMol | Gaussian | MS Powerpoint | MS Word

Relevant Courses

Bioinformatics	Quantum Chemistry Computation	Machine Learning
Numerical Methods	Computer Programming for Chemistry	Programming and Algorithms
Biological Systems	Quantum Mechanics	Biotechnology
Linear Algebra	Probability and Statistics	Vector Calculus

- **Courses related to** Biochemistry, Neurobiology, Real Analysis, Differential Equations, Material Science, Statistical Mechanics .