Amal Agarwal | **09D11001**
Engineering Physics | **UG Third Year (B.Tech.)**
Indian Institute of Technology, Bombay | **Male**
Specialization: Nanoscience | **DOB: 19/11/1990**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2012	8.84
Intermediate/+2	CBSE	Maharaja Agrasen Vidyalaya	2008	93.00
Matriculation	CBSE	Maharaja Agrasen Vidyalaya	2006	89.50

SCHOLASTIC ACHIEVEMENTS:

1. Currently ranked 1st among the dual degree students in the Department at the end of 5 semesters.

2. Changed Branch from Dual Degree Metallurgical and Materials Science to Dual Degree Engineering Physics at the end of first year at IIT Bombay (on the basis of CPI).

3. Secured an All India Rank of 2467 (amongst about 4,00,000 students, with a percentile of 99.40) at the national level Joint Entrance Examination for the IITs.

4. Secured an All India Rank of 2485 in AIEEE.

5. Selected for the outstanding achievement award during the annual day celebration of Institute for Plasma Research (IPR), Gandhinagar held on 29th November 2008.

6. Secured All India/State/City/School Ranks 627/20/3/2 in the Nationwide Interactive Science Olympiad 2007 held on 12th September 2007 in India and abroad.

7. Secured second position in the Cadbury Bournvita Intra-school Quiz Contest held on 30th December 2003.

PROJECTS UNDERTAKEN:

1. Generation of Penrose Tiles – project as a part of Supervised Learning course under the guidance of Prof. Dr. Kantimay Das Gupta during July-November 2011.
   Description:
   - Developed an algorithm to generate points in non-periodic penrose tiling using nodal analysis.
   - Exhibit in the form of a puzzle in Techfest 2012, the largest technical festival of India.

2. Light Control Module and Light Lock – project as a part of Microprocessor laboratory under the guidance of Prof. Dr. Pradeep Sarin during September-November 2011.
   Description:
   - Designed and tested a light control module comprising of PIR sensor circuit, LDR circuit and microprocessor that responds to the light intensity and controls output parameters of an electrical device. Major applications in power saving.
   - Designed and tested a light lock comprising of LDR circuit and microprocessor that responds to only certain predefined patterns of light. Major applications in cost effective security.

3. Neural Network Modelling in C. Elegans – project as a part of Summer Students Programme in Institute for Mathematical Sciences (IMSc.), Chennai under the guidance of Prof. Dr. Sitabhra Sinha during May-June 2011.
   Description:
   - Read published papers on different models of neuronal activity in C. Elegans.
   - Coding in Matlab and Mathematica.

4. Non-linear Fluid Dynamics and Turbulence – class presentation as a part of non-linear dynamics course during November, 2010.
   Description:
   - Studied non-linear fluid dynamics, turbulence and Navier-Stokes equation in detail.
   - Explained the different concepts to classmates.

5. Auxetic Materials – project as a part of Materials and Technology course during March, 2009.
   Description:
   - Made a model with straws and rubber bands depicting materials with negative Poisson's ratio.
   - Designed a poster explaining the related concepts.

6. Age of Chempires – competition organized by Azeotropy, the annual department festival of chemical engineering during February, 2009.
   Description:
   - Identified technical faults at different stages of a production unit given a virtual fully functional manufacturing industry.
   - Resolved errors at minimum expenditure.

7. UID (Unique Identification Database) – programming using C++, part of CS101 course during October, 2009.
   Supervisor: Dr. D.B. Phatak, Department of Computer Science, IIT Bombay.
   Description:
   - Database creation, storage for more than 750 students via loops, fingerprint input and storage (software provided), cross-checking for counterfeit data and fingerprints.
   - Unique identification by thinning of lines and judgement by pattern reading of the prints.
   - Application for keeping personal information, marks, attendance.

8. F1 Car – competition organized by Technic at IIT Bombay during September 2009.
   Description:
   - Made a fully functional remote controlled car.

COMPUTER KNOWLEDGE:

- Received training in C++ coding during first semester.
- Other softwares: MATLAB, SCILAB, MATHEMATICA, PYTHON, SAGE and HTML.
- Preliminary knowledge of SQL.
- Fluent in using Windows 7 / Vista / XP and Linux operating systems (Ubuntu).
- Proficient in MS Word, Excel, Access, Powerpoint, etc.

COURSES COMPLETED BY NOVEMBER 2011:

Physics:

- Optics
- Photonics
- Electromagnetism
- Thermodynamics
- Waves & Oscillations
- Classical Mechanics
- Quantum Mechanics-1
- Quantum Mechanics-2
- Non-Linear Dynamics (Honor)
- Continuum Mechanics (Honor)
- Supervised Learning (Honor)

Mathematics:

- Calculus
- Linear Algebra
- Differential Equations I & II
- Complex Analysis
- Numerical Analysis
- Introduction to Probability Theory (Minor)

Others:

- Course on C++
- Probability and Statistical Methods
- Micro-controllers
- Inorganic, Organic and Physical Chemistry
- Introduction to electrical and electronic circuits (includes MOSFETS, DIODES)
- Introduction to Renewable Energy technologies
- Environmental Studies
- Economics
- Philosophy

Lab Courses:

- Physics Lab (1^{st} semester)
- Engineering Drawing (1^{st} semester)
- Chemistry Lab (2^{nd} semester)
- Mechanical Workshop (2^{nd} semester)
- Experimental and Measurement Laboratory (3^{rd} semester)
- Electronics Laboratory I (3^{rd} semester; Uses of Oscilloscope, Diodes, MOSFET)
- Electronics Laboratory II (4^{th} semester; Analog Electronics)
- Physics Laboratory I (4^{th} semester)
- Electronics Laboratory III (5^{th} semester; Microprocessors)
- Electronics Laboratory IV (5^{th} semester; Digital Electronics)

CURRENT COURSES:

- Statistical Physics
- Electromagnetic Theory I
- Introduction to Condensed Matter Physics I
- Methods in Experimental Nuclear and Particle Physics
- Quantum Information and Computing
- Group Theory Methods
- Introduction to Derivative Pricing (Minor)
- Physics Laboratory II

DECLARATION: The information presented above is correct and true to the best of my knowledge.