



Indian Institute of Technology, Bombay
Powai, Mumbai 400076

Curriculum Vitae

Pankaj Mandal

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Engineering Physics
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Currently in Second Year, pursuing Dual Degree (B.Tech + M.Tech) with Masters in Nano Science, in Engineering Physics from IIT BOMBAY

CPI: 8.16 (as up till third sem)

* CPI stands for Cumulative Performance Index and is measured on a relative scale of 10.

School Record:

Examination	Institute	Score
Intermediate(+2) C.B.S.E -2012	Prestine Children High School, Muzaffarpur	88.8%
Matriculation C.B.S.E -2010	Rashtriya Military School, Bangalore	C.G.P.A – 10/10

PROJECTS

- **Study of Magnetism and Magnetic Characteristics (Duration-6 months):** [From May'13]
Guide: Prof. K. G. Suresh (Dept. of Physics, IIT Bombay)

Reproduced and analyzed characteristic plot of Brillouin curve of μ -H/T, Heat-Capacity –Temp, χ -Temp, Hysteresis loop, Magneto-Caloric Effect (reading a research paper on it) and analyzing Specific-Heat and Temp data to plot ΔS vs. T & ΔT vs. T using numerical approximations techniques like Trapezium-integration, Linear-interpolation, Ranga-Katta method, Magneto resistance, Sat. Magnetization-Temp, plotting graphs of data were done using MATLAB.

- **Institute Technical Summer Project (2013):** [May-Jun'13]

Intensity varying energy-efficient LED-bulb, by sensing intensity of the environment. Used microcontroller (Arduino), pulse-wave modulation and IR and LDR sensor, printing the whole circuit on PCB using EAGLE software.

COURSE PROJECTS:

- **Presentation-talk on:** [Aug-Sep'13]

Tractable non-linear eq., solving shallow-water waves eq. (using KdV equation) and Soliton solutions.

- **Optics project:** [Aug-Sep'13]

Polarization by Lissajous figure experiment. Working of a half and quarter wave-plates for light being explained by RLC circuit.

- Made a remote-controlled toy robotic car (first time using an IC). [Aug-Sep'12]

- **Cricket League Program:** [Oct-Nov '12]

Made an efficient C++ program to demonstrate league matches between various groups of playing teams. Applied many visual effects using simple C++ logics.

ACADEMIC ACHIVEMENTS:

- Undergraduate Research Award (URA-01) being awarded for the project on “Magnetism and Magnetic Characteristics”.
- Ranked **1133**, amongst the top **0.23%** students appearing for **IIT JEE-2012**, a joint entrance examination for IIT's, with 0.5 million aspirants.
- Ranked **1452**, amongst the top **0.15%** students appearing for **AIEEE 2012**, a joint entrance examination for national engineering colleges with 1 million aspirants.
- Secured **1st rank** in Bangalore district in national level Mathematics Olympiad organized by Putani Viagnana Group, in the year 2008.
- Cleared entrance test for Rashtriya Military Schools (with 0.8% success ratio) and became a part of defense family as a cadet.

Important Courses done are:

Physics:

Modern Physics
Electro-Magnetism
Classical Mechanics
Non Linear Dynamics
Optics
Quantum Mechanics I*
Continuum Mechanics*

Mathematics:

Vector Calculus
Linear Algebra and ODE
Complex Analysis and ODE II
Numerical Analysis*
Labs: Physics Lab
Chemistry lab
Computer Prog. &Utilization

Statistics

Data Analysis and Interpretation

Minor courses:

Electronic Devices*
Digital Electronics
Electronics Lab I
Electronics Lab II

*Courses to be completed before Apr'14

TECHNICAL SKILLS:

Programming: C++, MATLAB, LaTeX

Software package: MS Office, OriginLab, Labview, Eagle (circuit designing)

Web: HTML

AREAS OF INTEREST: Spintronics, Magnetism, Optics, Astrophysics, Quantum mechanics and computation, Non-Linear Dynamics, Organic chemistry

Position of Responsibility:

- **Organizer** at TECHFEST-2013, which is an annual technical fest of our institute.
- Core team member of GRA (Group for Rural Activities), an institute recognized social body.
- Held the position of team leader from the school in the NCC (National Cadet Core) camp in 2008.

Extra-Curricular Achievements:

- Adjudged best all-rounder of the class for the year 2007-10.
- Represented school in many inter-school quiz competition from 2007-10.

Sports Achievements:

- Inter-IIT sports contingent, of IIT Bombay, representing hockey.
- Represented school hockey team in **Randhawa-cup** (a district level hockey tournament).
- Part of school hockey team (2007-2010).
- Part of school cricket team (2009-2010) and played **Boost-cup** (state level inter-school tournament in which more than 90 schools take part) and reached semi-finals.
- Played in inter-house boxing once, in the year 2009.
- **Hobbies-** A travelling enthusiast. Like to explore different cultures.