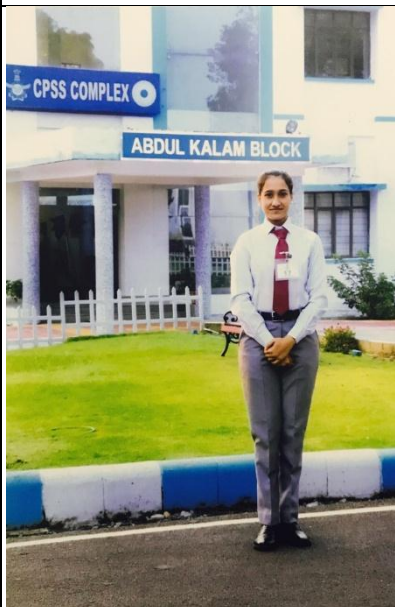|		
Learning Motivations	**Learning Pursuits**	**Learning Outcomes**

Learning

at

Priyadarshini Knowledge Center

Few Examples →

Sahiba Kaur Saddal (2013-17)

Motivation : To Join Indian Air Force

Pursuits

- Pursued knowledge based Learning during first year about (i) How a Laser reads a CD and (ii) Understanding Archimedes Principle
- Participated in the Meeting of the Youth Council held by the Ministry of Youth Affairs and Sports on 5th May 2014 and mentioned the need for setting up Knowledge Centers across the country
- Completed Summer Training Programme at CCMB, Hyderabad (May-July, 2016)
- Pursued curricular learning to maintain consistent grades

Outcomes

- Received Gold Medal from former Prime Minister of India, Dr. Manmohan Singh for being "The Best Air Wing Cadet" at Republic Day Camp, New Delhi in 2014
- Published a paper, 'Green synthesis of silver nanoparticles ----activity' [Journal of Pharmacy Research Vol.12(6), 2018, p. 840-44)
- First Merit in B.Tech (Biotechnology) exam. Summer 2017 of RTMNU
- Selected in Indian Air Force (July 2019)

CityLine

City girl Sahiba selected for IAF Commissioning

■ Staff Reporter

SAHIBA Kaur Lakhbir Singh Saddal has brought laurels to the city as she has been selected for the Indian Air Force (IAF) as an officer.

Sahiba will be joining the course commencing in July 2019 at Air Force Academy, Hyderabad. She has made it to the four vacancies of Logistics Branch for commission in the IAF. She is the daughter of Late Lakhbir Singh Saddal, owner of New Gandhi Furnitures and Dr Davinderpal Kaur, a homemaker, businesswoman and a Ph.D. in Hindi Literature. She has two elder sisters Kirandeep and Anudeep.

Sahiba has done her schooling from Mount Carmel Girls' High School. She scored 92.55 per cent marks in 2011. After doing HSC from Dr Ambedkar College, Nagpur in General Science in 2013, she completed her BTech (Biotechnology) from Priyadarshini Institute of Engineering and Technology, Nagpur in 2017 and stood first in the order of merit from Rashtrasant Tukadoji Maharaj Nagpur University with CGPA 9.08 out of 10. She has has completed her five years of National Cadet Corps (NCC) training. She has successfully secured 'A' grade in NCC A, B and C Certificate examinations and was part of Republic Day Camp 2010 and 2014 as the best cadet. As the Junior Wing cadet, she was Best Cadet and won All India Silver Medal. In the Senior Wing she received Gold Medal from Dr Manmohan Singh, the then Prime Minister. She was a part of 3 Maharashtra Girls' Battalion in Junior Wing and No 2 Maharashtra Air Squadron, Nagpur in Senior Wing.

Expressing happiness over her selection in the IAF, Sahiba thanked her mother, all her teachers, relatives and friends and expressed gratitude towards everyone who influenced her life and motivated her to be a better person.

Sahiba Kaur Lakhbir Singh Saddal receiving Gold Medal from Dr Manmohan Singh, the then Prime Minister, in 2014.

Shobhit Chaturvedi (2013–17)
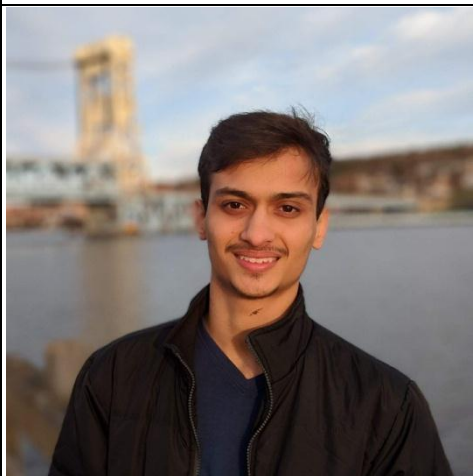
Motivation : Research

Pursuits
- Pursued knowledge based Learning during first year about (i) Substructure of electron (ii) Cosmological models
- Summer Intern in Chemical Engineering at IIT, Bombay, May – June, 2016

MOOCs
"Quantum Mechanics for Scientists and Engineers", Stanford University
"Understanding Research Methods", University of London on Coursera
"Python Data Structures", University of Michigan on Coursera
"Leading Organizations", HEC Paris on Coursera
"World of Wine: From Grape to Glass", University of Adelaide on EdX
"Cosmology", Australian National University on EdX
"From Big Bang to Dark Energy", University of Tokyo on Coursera.
"Greatest Unsolved Mysteries of the Universe", Australian National University on EdX.

Achievements:
• Secured 3rd Position for Model Exhibition on "Microbial Fuel Cell" at NCOAT–NIRMITI – 2016, PIET
• Awarded by Rotary Club of Nagpur for active participation as "Secretary of Rotaract Club of PIET" in 2015 – 2016.

Outcomes
Research Assistant in Chemical Engineering at IIT, Bombay, June – December, 2017
Pursuing Doctoral Research in Chemistry and working as Teaching Assistant at Michigan Technological University since January 2018 [published papers in journals of repute such as Chem. Eur. J., Org. Biomol. Chem., and Chem. Commun.]

Dhiraj Powar (2014–18)

Motivation : Research

Pursuits

- Pursued knowledge based Learning during first year about scientific techniques to explore the interior of earth and about medical devices and natural dyes in higher years

Achievements

- Received Award of Excellence for demonstrating great teamwork, innovation and presentation in Medical Devices Hackathon (MEDHA) held during 14-16 July 2017 at Somaiya College of Engineering, Mumbai

- Received Award of Excellence for successfully completing all prescribed activities in Medical Devices Innovation Camp held during 15-17 September 2017 at College of Engineering, Pune

- Published a paper, 'Natural dye extraction from temple waste flowers' in the International Journal of Natural Products Research, Volume 8, Issue 1, 2018, p. 12–14

Outcomes

- Selected as Research Trainee at KBCOLS Sciences Pvt. Ltd., Pune – a technology driven startup at Bio-incubator of NCL Innovation Park, Pune

Saket Chaturvedi (2016–20)

Motivation : To Pursue Learning of Machine Learning and Deep Learning

Pursuits

- Summer Internship at IIT, Nagpur, May 2019 – June 2019

MOOCs

- Machine Learning Course by Stanford University December 2016
- Machine Learning Specialization by Washington University April 2017
- Python Specialization by University of Michigan September 2017
- Deep Learning Specialization offered by deeplearning.ai March 2018

PROJECTS

- Skin Lesion Analyser December 2018 – March 2019
- Spot Nuclei. Speed Curves. (Kaggle Competition) January 2018 – April 2018
- Redefining Cancer Treatment (Kaggle Competition) July 2017 – September 2017

Achievements / Outcomes

- 73rd rank (top 6%) among the 1386 participants in the Kaggle Competition
- Selected to participate in the National Level Championship UTKRAANTI-18 at IIT Kharagpur
- 1st rank in the department for 1st, 3rd 4th and 6th semester of RTMNU Exams

Rani Yadav (2017–21)

Motivation – Understanding How to Derive the Equation $E = mc^2$

Pursuit →

Force is the rate of change of momentum, i.e.,
$F = dp/dt = d/dt(mv)$
According to Newton, mass is constant and hence $F = m(dv/dt) = ma$, where a is the acceleration.

According to Einstein mass of a body is not constant but depends on the velocity of the body.
Thus $F = dp/dt = d/dt(mv)$
Or $F = m(dv/dt) + v(dm/dt)$ ---(1)

Supposing that the force acting through a distance dx raises the kinetic energy by dE, then, using Eq. (1), $dE = Fdx = m(dv/dt)dx + v(dm/dt)dx$

Using $v = dx/dt$, we get $dE = mvdv + v^2dm$ --- (2)

According to Einstein's theory of relativity, mass of a body moving with velocity v is given by $m = m_0 / \sqrt{[1-(v^2/c^2)]}$, c being the speed of light.

Thus, $m^2 = m_0^2c^2/(c^2-v^2)$ Or $m^2c^2 - m^2v^2 = m_0^2c^2$

Differentiating, we get $c^2 \times 2mdm - v^2 \times 2mdm - m^2 \times 2vdv = 0$

Dividing by 2m, we get $c^2 dm - v^2 dm - mvdv = 0$

or $mvdv + v^2dm = c^2dm$ --- (3)

Comparing Eq. 2 and 3, we get, $dE = c^2dm$

Total kinetic energy acquired is obtained by integrating the above equation. Thus, $\int dE = \int c^2dm$
Or $E = mc^2$

$E=mc^2$ is probably the world's most famous equation. Deduced from his theory of relativity, it suggests that tiny amounts of mass can be converted into huge amounts of energy.

Outcome

Rani Yadav explaining the derivation

Mayank Yelkar, Rohit Sahi, Pratik Karadbhajane and Aniket Umredkar M. Sc., III Sem. 2019, Post Graduate Department of Electronics and Computer Science, RTMNU	
Motivation – To develop a Laser Link Communicator	
Pursuit	Outcome