

# [Natco. i decided to pursue a bachelor’s](https://assignbuster.com/natco-i-decided-to-pursue-a-bachelors/)

[Business](https://assignbuster.com/essay-subjects/business/), [Industries](https://assignbuster.com/essay-subjects/business/industries/)

Natco.

V Bayer. A controversialcase for many reasons but one that piqued my interest in the importance ofbioprocessing. Although the focal point of this case was the issue ofcompulsory licensing, it led me to thinking about how the same product can be synthesizedin multiple ways, thus altering consequences like cost of manufacturing, pricing and accessibility. As an amateur Biotechnologist, I explored these aspects further and realized the impact of howinnovative technologies can help us achieve these objectives, and this is wheremy fascination with the field of Bioprocess Engineering started. Biologyhas always been my subject of interest. Back in college, I vividly remember attendinga seminar on the recent advances in biotechnology and bioprocessing. Theprofessor mentioned about concepts and technologies that simply blew my mind.

Tobe honest, not that I really understood the ideas he put forth, because it allseemed so impossible to me. It only made me more curious to explore theprocesses that we generally consider mundane, at a cellular level. This is whenI decided to pursue a bachelor’s degree in biotechnology. Asa Biotechnology undergraduate at Savitribai Phule Pune University (formerlyUniversity of Pune), I believe the course work has provided me with a solidfoundation in science as well as engineering related subjects and various mathematicalconcepts. Courses like Applied Chemistry and Biochemistry have helped me gain goodknowledge about biomolecules, their importance in metabolic and biologicalprocesses, functions and their interactions with other molecules; while GeneticEngineering and Genetics & Molecular Biology have been useful inunderstanding the production and amplification of these biomolecules at geneticlevel. The practical sessions from Microbiology and Cell Biology & TissueCulture have equipped me in handling microbial cultures and various tissueculture techniques. Fermentation Technology, Reaction and BiochemicalEngineering have provided a basic knowledge about upstream processing andcourses on Bioseparations have given an insight about downstream processing. Iwas introduced to chemical engineering concepts required in designing abioprocess in courses like Fluid Flow & Unit Operations, Heat & MassTransfer, Stoichiometry and Thermodynamics.

A thorough knowledge about thevarious parameters affecting the bioprocesses plays a critical role in scale upstudies. Bioprocess Equipment Design and Plant engineering & ProjectCosting familiarized me to the model of design criteria for manufacturingquality product. I am also convinced that Ihave successfully implemented my theoretical knowledge in a laboratoryenvironment, asexemplified by the fact that I have received excellent grades in theInstrumentation & Process Control and Bioprocess Modelling & Simulationlab. In my opinion, my undergraduate course has prepared me in all aspects topursue a master’s degree in Biological & Agricultural Engineering with amajor focus in Bioenergy & Bioproducts Engineering. Further, during my undergraduate studies, my curiosity and propensity for appliedlearning resulted in my training at APT Research Foundation (formerly NationalToxicology Centre) under the guidance of Dr. Kishori Apte. ATR is a pre-clinicaltesting centre. During my fifteen days training, I was thoroughly explainedabout the in-vivo and in-vitro toxicity tests performed in the laboratory, asper the OECD guidelines.

The training was very helpful in understanding somebasic concepts from a final year elective course: Biotherapeutics Technology. Seminars and presentations have always been an integral part of myundergraduate coursework. I had given a seminar on ‘ Anticancer Drugs fromMarine Source’, in my third year, with a thorough literature review about theFDA approved anticancer drugs and potential drugs in clinical and preclinicalpipeline, their source, biosynthesis and mode of action.

In my final year, impressed by my meticulous presentationskills, one of my professor gave me a chance to conduct a session in a juniors’class on ‘ Embryonic Stem Cells and Clinical Applications’Inorder to maintain a high regard for an all-round development of my personality, apart from academics I encouraged myself to participate in extra-curricularactivities during my undergraduate studies. I have served as a collegerepresentative for inter-college swimming competitions, official campusphotographer for cultural fests, photographer for the department’s newsletterand member of the organizing committee for technical fests. I have also beenassociated with CRY, an NGO in India working towards the upliftment ofunderprivileged children and was awarded as the ‘ Best Debut- Female Volunteer’for my contribution in Pune’s Public Action Group (PAG). Later, I worked on my undergraduate thesis entitled, ‘ Bioprospecting for Hydrophobins’under the direction of Ass. Prof. Shraddha Kulkarni. Hydrophobins are smallcysteine rich surface active proteins produced by filamentous fungi, having aplethora of applications due to their ability to self-assemble into amphipathicmembranes at an interface. The objective of my research was to isolate and identifyhydrophobin producing fungal strains from waste samples of malt processingindustry Barmalt Malting India Pvt.

Ltd. Further I worked on the development ofa bioprocess for the production of hydrophobins from isolated GRAS clearingfungal strains. And optimized the process to increase the yield of hydrophobinproduction. I was fortunate enough to get a chance to present my results at twonational conferences. It was for the first time I was involved in conducting aresearch.

I would often wait back after classes or work during weekends, especially to see my results. Also, I engaged myself in reading journals andmonthly magazines to keep myself updated about the upcoming technologies in thedevelopment and manufacture of bioproducts. This eventually got me interestedin the subject.

Aftera year of researching about fungal protein in a university environment and dueto my ever increasing enthrallment with these fields, I was certain that Ineeded to get involved in this type of research. I was privileged to beselected for the competitive Biotech Industrial Training Programme 2016-17 atPraj Matrix – R Centre (Division of Praj Industries Ltd.) Pune. Thetraining was sponsored by the Department of Biotechnology, Govt.

of India. Iworked under the guidance of Dr. Yasmin Mirza. The emphasis of my individualproject was to improve bacteriocin production by inducing UV mutation in Bacillus amyloliquefaciens. The trainingintroduced me to the thrilling nature of working in an industrial-level researchlaboratory. Currently, I am working as a Biotechnologist at Praj Matrix – R Centre which is adivision of Praj Industries Ltd. Praj is one of the most successful companiesin India in the field of bio-based technologies and engineering, supplier ofethanol plants and providing sustainable solutions for bioenergy, bioproducts, breweriesand industrial wastewater treatment.

I am currently working on an antimicrobialpeptide, which is the company’s in-house product. Iam interested in studying the fundamentals of biomolecular processes with anengineering approach. Moreover, today the bioprocess industry is facing somebottlenecks that gives a tremendous scope for research and innovation in thisarea. With a graduate degree in this field I wish to equip myself so as to beable to solve these real world problems.  One common bottleneck is experienced whileexpanding from pilot to manufacturing scale, every step requires new controlsfor effective productivity. Another challenge is to find new ways to increaseproductivity, reduce costs while still ultimately develop new technologies thatenhance human life. Inaccordance with my current research interests, I think that the Biological & Agricultural EngineeringProgram with a major focus in Bioenergy & Bioproducts Engineering atWashington State University is ideal for what I would like to study.

I amparticularly interested in working in the Bioprocessing & BioproductsEngineering Laboratory and the research of Dr. Shulin Chen and Dr. Birgitte K. Ahring. Definitely, my interest in this program is also strengthened by WSU’sexcellence in Industrial Biosystems Engineering research and collaboration. Iam confident that the program will enhance my abilities to integrate my technicalknowledge with practical applications. Aftercompleting the graduate program, I hope to obtain a doctoral position at aninstitute specifically examining biological systems engineering and creatingeffective solutions to practical problems.

I then hope to obtain a virtuous position inthe industry, with an aim to develop robust revenue-saving manufacturingprocesses for bioproducts beneficial to mankind.