

# Biomedical engineering program

[Engineering](#)



**ASSIGN  
BUSTER**

This profession is fast paced and filled with excitement, boomed will forever be evolving as the search and knowledge of all things medical grow. Now biomedical engineering is a larger profession than many think and is broken into many sub-specialties that require even a higher level of education and experience. Biomedical engineering requires a higher level Of education after high school. Now before college for those interested they should enroll in advanced math and science classes to help with better preparation.

Now while you're in college obtaining an internship would be very beneficial to getting a job after graduating since most are looking for those with experience. Biomedical engineering includes coursework from both engineering and biology. Depending on your school the subjects vary but will normally include bimetallism, physiology, solid and fluid mechanics, and computer programming. Now if you enroll in a biomedical engineering program it must be accredited by ABET, if not your degree may not help you get a job after graduation.

Well after graduation a brighter world opens up to you and you have a wide variety of other directions to travel because biomedical engineering doesn't just stop there. Tissue engineering is the study for the Roth of new connective tissues, organs, etc. This allows the creation of fully functional organs for implantation into host bodies. Sounds quite innovative and it is with the direct implantation over transplantation which could cause the host body to reject the organ causing further problems. Now to break down this process first a sample of cells would be taken from the host body, which soon after will be cultured from explants.

Culturing explants is basically the process of migrating and the expansion of cells. Then the cells get further altering to form tissue that's been engineered for implantation. Now these experiments are carried out within special Tissue Culture Facilities to keep a safe and sterile environment. Now when these donor implants are created they are given growth measures so the cells can multiply and grow so once implanted they will recreate their intended functions. Now that's quite fascinating, but this is just the tip of the ice berg there's much more to be unfolded.

Genetic engineering deals with the manipulation and changing of cells and their makeup. Often people think of this being a way to create super organisms, which is actually quite true in a sense. This part Of biomedical engineering helps scientist break through the boundaries that restricts them from creating novel organisms. Novel organisms are organisms that can produce offspring with new gene combinations through sexual reproduction. Now this process takes place when engineers extract specific gene traits and transfers them into another specimen.

Therefore new combinations of genes and traits lay a path for new species that doesn't occur in nature and by which can't be developed by natural means. Although these may be great feats this is one of the riskier specialties. Alongside the benefits adding unnatural genes and traits can bring forth unknown consequences, but this is someone's future and our future. Neural engineering runs on the principals of wanting to understand the brain and how it works; all the while developing new technology to interact and treat the brain.

These engineers are taught about fundamental diseases such as Alzheimer's, Parkinson, tinnitus, and epilepsy. Other skills that are needed for this profession include signal processing, image processing, instrumentation and computational modeling as well as electrode design, amplifier and filter design, brain machine interfaces, cochlear implants, and deep brain stimulation. Now all of that sounds overwhelming but neural engineering requires some of the top precision because the brain is something like the body's controller. So being an amateur in this field is not something that's accepted. Clinical engineering deals with the stride towards better technology to analyze and provide solutions for the clinical needs of patients. This field is quite diverse and covers a lot of areas within health care. These engineers work with complex human and technological systems. Now these men/women are the technical managers of the medical equipment, some of their responsibilities include financial or budgetary management, service contract management, data processing and in house operators.

In addition they also fill other important functions like assuring that the medical equipment is safe and effective. Clinical engineers are one of the more precise and helpful of the engineers because they work with medical, nursing and paramedical staff to ensure that the care they're trying to deliver with the assistance of technology is being worked to the best of its ability. Pharmaceutical engineering is the field that deals with the creating and manufacturing plants and pharmaceutical products that are generated by these plants.

These engineers help create the guidelines that regard the production of medical drugs in addition to their other work. Now unlike the tissue engineers  
<https://assignbuster.com/biomedical-engineering-program/>

their sites of work but maintain sanitary all the time on a count of the drugs and other items they handle. Labeling and packaging those pharmaceuticals after validating the integrity is another task they must handle. It may sound odd but a major aspect of the job is being able to design the pharmaceutical facility.

They must build pharmaceutical and research facilities while considering the equipment needed and the "classrooms" and other utility stations they use. Clean rooms are an enclosed area that have low numbers of environmental pollutants, like dust or other things that can contaminate, this is somewhat of a pharmaceutical engineer's sanctuary in a way. In conclusion, biomedical engineering is a very demanding yet interesting profession and can branch off into other specialties to enhance the fascinating experience.

As you read through some of them, you may realize that each has their own intricate points, but all of them have one common goal and that's to provide healthcare and its people with the best of the best no matter what they're in need of. No matter which direction you decide to go with, you'll need a concise, clear mind and an education to back it up. This is a very advanced profession and will only grow upon itself for years to come, so if this profession is chosen, be sure that you're ready and filled with enthusiasm and ambition because it will be needed.