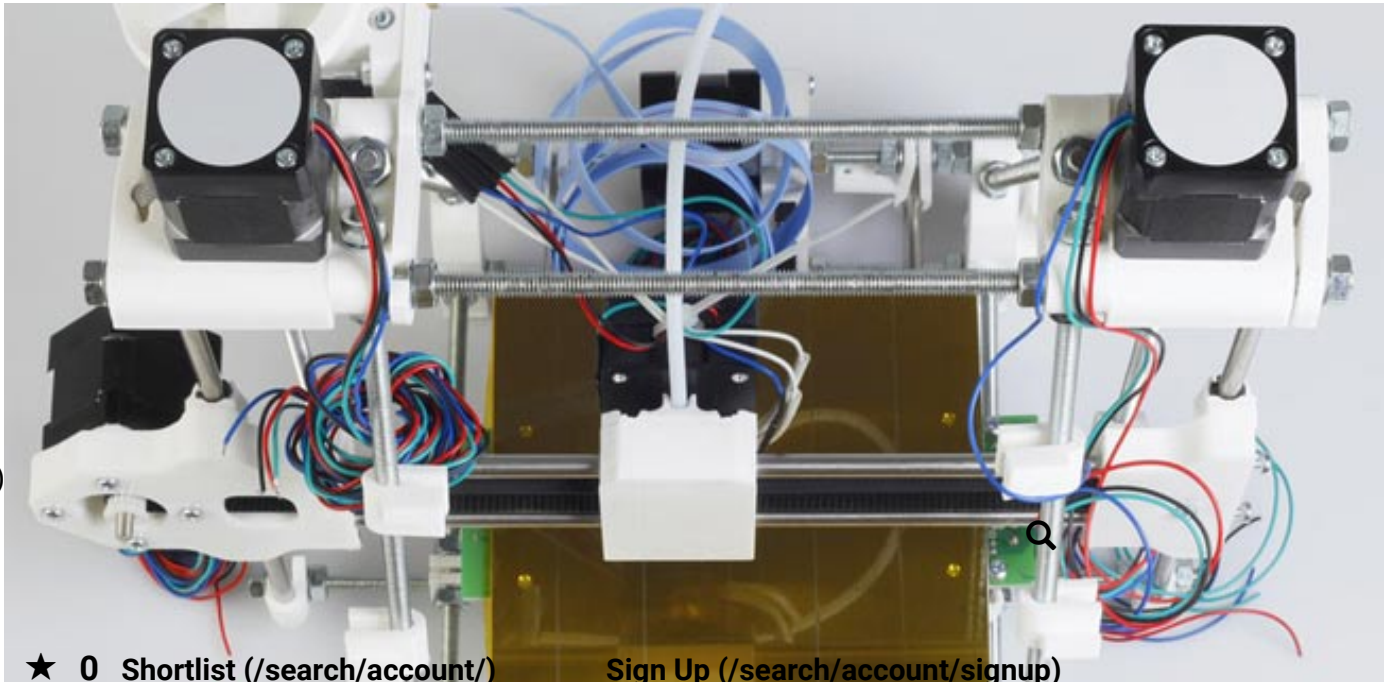


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How 3D Printing Will Change Your Engineering Degree



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How 3D Printing Will Change Your Engineering Degree

In recent years, 3D printing has truly begun to capture the imagination of the masses, as low cost printers for personal use begin to make it possible for hobbyists and aspiring designers to create objects designed in CAD software right on their desks.

3D printing is also triggering a change in the way both small businesses and industry giants build and design their products. This is starting to be reflected in today's engineering degrees and as this technology changes and matures, so will the future of engineering and the engineering degree. So what changes can you expect 3D printing to bring to engineering over the next ten years? And what do these changes mean to you and your engineering degree in the future?

The Future Of 3D Printing

Three dimensional printing, or additive manufacturing, goes beyond the capability of printing in the traditional sense of ink on paper, allowing for 3D objects to be physically printed before your very eyes. 3D printers allow you to create prototypes, models and products out of materials such as plastics and metals. The printers do this by creating layer upon layer of your design in your chosen material until the final product is formed. 3D printing allows companies and individuals to rapidly prototype ideas for new parts or products and also promises to cut down costs on the creation of products through savings in supply-chains, product waste and storage.

The benefits of 3D printing are likely to revolutionise many industries. The automotive and aerospace industries benefit from much shorter lead times than with associated traditional engineering methods such as casting or machining, allowing for much faster development and testing of components. In the future, it may even be possible for large components or even entire cars to be entirely 3D printed, as recently demonstrated by Local Motors (<https://localmotors.com/localmotors/the-3d-printed-car-aka-direct-digital-manufacturing/>) at the 2014 International Manufacturing Technology Show (<http://www.imts.com/>) in Chicago, USA.

The ability to print electronic circuitry points to a future of consumers being able to 3D print electronic consumer products such as mobile phones, or the possibility of producing highly customized products based on individual consumer preferences. Google has recently partnered with 3D Systems to develop Project ARA (<http://www.3dsystems.com/blog/2014/04/new-details-project-ara-and-future-modular-phones>), a modular phone which will allow customised 3D printed personalised features, which could point to a future of consumer electronics highly shaped by 3D printing.

The food industry is also set for a revolution thanks to 3D printing. NASA has invested in the technology (http://www.nasa.gov/directorates/spacetech/home/feature_3d_food_prt.htm) in the hope that one day its astronauts will be able to print their food whilst in space. Whilst printers currently exist that allow for 3D creations of foodstuff such as chocolate (<http://www.bbc.co.uk/news/technology-25647918>) and pasta (<http://www.theguardian.com/lifeandstyle/2014/jan/09/3d-printed-pasta-shapes>), 3D printing may in the future be able to allow fine control of the nutritional content of many types of food, which in turn could help tackle several health problems such as obesity and diabetes or even world hunger.

Healthcare is also set to benefit hugely from developments in 3D printing. 3D printing has already found use in preparing dental prosthetics, hearing aids and bespoke scaffolding for joint replacement and reconstructive cosmetic surgeries. The promise of printing functional human tissues could lead the way for 3D printing organs such as kidneys to help

test new drugs and even directly replace failing organs.

Degrees That Will Push The Future Of 3D Printing

As 3D printing itself is a relatively new industry in its own right, there are not yet many degrees available that focus solely on 3D printing, but there are a select few already in existence.

One such degree is a Masters degree in 3D Bioprinting that will appeal to postgraduate students with an interest in regenerative medicine. Offered in partnership by Queensland University of Technology and the University of Wollongong (both in Australia) and University Medical Center Utrecht of the Netherlands and the University of Würzburg in Germany, this degree will focus on the biofabrication of new body parts.

There are many types of engineering degrees that will give you a background that is directly applicable to the world of 3D printing, and some even encompassing different subjects areas that will give you direct access to the techniques used in additive manufacturing processes.

Materials & Chemical Science

Material science is one of the most important areas for innovation in 3D printing. Additive manufacturing processes exist for a range of different materials already such as plastics, metals, foodstuffs, wood and concrete. For 3D printing to fulfill its potential to revolutionise different industries, material science has to progress what is possible in terms of printing material.

Studying a degree incorporating material science and technology will help you to develop materials that are more durable, lighter, safer and more environmentally friendly to use.

The need for modern, low cost and durable printing materials also extends to chemical science, where advances will lead to more advanced plastics for use in products. In the health industry, it is hoped that advances in 3D printing and chemical processes will lead to molecule level printers that are able to print drugs on demand. So look for degrees in chemical engineering to get involved in this area.

Mechanical Engineering

3D printing makes it possible to produce objects with much more complex structures than traditional manufacturing methods and is likely to become the go-to manufacturing process for many different areas in manufacturing.

By studying a degree in Mechanical Engineering (<http://studylink.com/search/guides/mechanical-engineering-courses>) you will be able to equip yourself with knowledge of the latest developments in industry and you will be well placed to make your career in revolutionising manufacturing processes.

Electronic Engineering/Mechatronics

Studying a degree in electronic engineering (<http://studylink.com/search/guides/electrical-engineering-courses>) or mechatronics will allow you to apply yourself to the integration of electronic components and circuitry in 3D printed components, or even study the electronics and robotics that will control the manufacturing processes of the future.

Civil Engineering

3D printing is poised to have a dramatic impact upon architecture, building design and manufacturing, with entire houses already produced in China with giant 3D printers. 3D printing allows building designers to experiment with shapes and geometries in design that may not be financially viable with existing building techniques.

By studying a Civil Engineering (<http://studylink.com/search/guides/civil-engineering-courses>) degree you will learn how engineers approach industrial problems and how 3D printing can improve upon existing solutions.

3D Modelling/Industrial Design

If you are more interested designing objects to create in 3D than the printing process itself, degrees in 3D modelling and Industrial design will both give you the technical and creative skills you need to make a career in designing items for manufacturing. Talented 3D modellers and Industrial designers that know how to design products to harness the capabilities of 3D printing will be help to drive innovation of additive manufacturing.

SEE ALSO: Product Design Degree Guide (<http://studylink.com/search/guides/product-design-degree>) – Everything you need to know about getting a degree in Product Design.

There are many different areas of Engineering that will benefit in the future from the advancements in 3D printing. Our advice is to pick the area of engineering that interests you the most to study and if you can apply what you learn to 3D printing, then you will help to drive the manufacturing revolution.



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