

What computer do I need for MSc Biotechnology and Synthetic Biology 2024/2025?

This guide aims to ensure you have the technology needed to complete your Biotechnology MSc at QMUL. We'll be looking specifically at laptops because you can use them at home and bring them to College if needed, but most of this guidance applies to desktop computers too. If you already have a laptop that you're planning to use for the MSc you can use this guide to check whether it's suitable, or if you need a new laptop this guide can help you decide which to buy.

You will be sharing the first module BIO726P Unix and Analysis of Large Genomic Datasets with students on the MSc Bioinformatics and MSc AI in the Biosciences. We're advising them to consider the following specifications:

Operating system: The most common laptop [operating systems](#) are [Microsoft Windows](#), [Apple Mac OS](#) (exclusive to Apple computers) or [Linux](#) (of which there are various flavours, such as [Ubuntu](#)). Most of the software used on the MSc will work on any of these operating systems, so which one you choose is a matter of personal choice¹. You'll need to use Linux-only software for some tasks, but these tasks also tend to be too demanding for laptops so we'll be giving you remote access to Linux-based computing facilities, including our high performance computing cluster, [Apocrita](#).

Screen size and resolution: It's a struggle to handle bioinformatics data on anything less than a 15" screen with [Full HD resolution](#) (1,920 x 1,080 pixels). Higher screen resolutions (e.g. [4K](#)) are very nice to have, but may reduce your laptop's battery life. Laptops don't generally go beyond 17" so having a larger (e.g. 32") external monitor that you can plug into your laptop when working from home would be useful, but not essential.

Processor and memory: You will be able to do everything you need on a [processor](#) with four physical [cores](#) and a [clock speed](#) of at least 2GHz. A faster processor with more cores will help things run more quickly, which is a bonus rather than a necessity. In terms of memory ([RAM](#)), 16GB is sufficient. Having more memory may lead to faster depletion of your laptop's battery.

Storage (hard drive): Modern laptops typically have solid state hard drives ([SSDs](#)), which are fast but have limited storage capacity. A 256GB SSD will be enough for MSc work, but if you use your laptop for other things (e.g. gaming, music production or video editing) you may need a larger SSD to avoid having to juggle files to ensure you have sufficient space to work.

Other bits and pieces: A **headset** with microphone is very useful for any online meetings you might have, e.g. during projects. Using a headset typically gives you better audio quality than built-in laptop audio. When spending long periods of time at the computer, a separate **keyboard** and **mouse** can help you work in comfort, and a proper desk and adjustable chair are also recommended for healthy posture.

Software: All the bioinformatics software we use is free and can be downloaded from the internet and installed as you work through the MSc. You will also need general productivity software for writing reports and producing presentations – Microsoft Office (Word, PowerPoint etc.) or the free equivalent [LibreOffice](#) are obvious choices for this.

Internet connection: Basic [broadband](#) (with a download speed of 10Mbps+) is the bare minimum, and only if you're not sharing your connection with other heavy internet users. A faster connection, such as fibre broadband (36Mbps+) will give you a much better experience.

¹ Note that operating systems designed for mobile devices, e.g. Chrome OS, Android and iOS are too lightweight for bioinformatics work so should be avoided.