

MIT Advanced Standing Examinations: A Primer for Prospective Freshmen

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You may have some advanced background in mathematics and science subjects prior to enrolling at MIT. In that case, you may be able to skip some basic-level courses and move ahead to take more advanced courses if you prove that you know the content well by

- scoring well enough in a relevant *Advanced Placement* (AP) exam, offered by the College Board, or
- passing an *Advanced Standing Examination* (ASE), offered by MIT during orientation, that is comparable to the final exam of the basic-level course you wish to skip.

There are many such exams possible, and they require various levels of preparation, so this guide will try to help you plan which ASEs to take, as well as give you a heads-up on the amount of work you need to prepare for them. The information only applies to freshmen enrolling in the fall; it may contain inadvertent mistakes, and it may also go out of date, so the MIT website is your best resource.

1 Advanced Standing Examinations

MIT works on a “modular” system where there are a large variety of classes, each on one topic, and you are mostly free to choose the classes you want and take them in any sequence; except that among other restrictions,

- there is a limit to the total number of hours of classes you can choose for the first two terms (freshman Fall and Spring),
- many classes have other classes as prerequisites¹, and
- some classes are *General Institute Requirements* (GIRs) that every MIT student needs to take in order to graduate.

Read up about the GIRs on the MIT website, and check out all of the classes at <http://student.mit.edu/catalog/index.cgi>.

Table 1 presents the ASEs offered freshman fall (roughly August to December) that are possible to skip, by topic (not the actual course title). Most of them are for GIRs, except for 18.03 and 18.06, which are required for majoring in mathematics.² Some of the classes can be skipped if you score well enough on a related AP exam, and if so the table lists the minimum score needed. Some ASEs require registration by emailing MIT staff; find out how to online.

After registering for the 18.03 and 18.06 ASEs, you will receive instructions on what to study and a list of homework problems that need to be completed and submitted on the day of the exam at MIT. Just to give a rough idea of the work involved, both homework packets I received had around 160 problems. Personally, I learned so much from doing that self-study and homework; I might not have passed those two exams if I hadn't prepared as much.

¹Waiving the prerequisites of a class is sometimes negotiable with its professor.

²Some variants of the math degree at MIT may not need either of these—read it up on the MIT website.



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Table 1: MIT Advanced Standing Examinations for freshmen enrolling in the Fall term.

Subject	Course No.	Topic	GIR?	Min. AP Score	Register?	Homework?
Mathematics	18.01	Calculus	✓	Calculus BC 4		
	18.02	Vector Calculus	✓			
	18.03	Differential Equations			✓	✓
	18.06	Linear Algebra			✓	✓
Physics	8.01	Mechanics	✓	Mechanics 5 and Electricity & Magnetism 5		
	8.02	Electricity & Magnetism	✓			
Chemistry	5.11x	Chemistry	✓		✓	
Biology	7.01x	Biology	✓		✓	

2 Notes on MIT Classes

Usually people who skip a class take some other class in its stead. You don't always need to; for most students only the upper limit on the number of hours of classes they choose matters. International students, however, have a minimum number of hours.

Freshmen in Fall term are under the coveted "Pass/No Record" protection: if you pass a class the grade shown on your transcript is "P" no matter how well you did or otherwise, and if you fail the class it doesn't show on your transcript. This applies to the grades for ASEs as well. So don't worry about your grades yet!

Many of the early MIT classes come in many variants, offering different focuses in content, teaching styles and learning speeds. These variants are interchangeable in terms of fulfilling GIRs or departmental requirements for a major, but they can't all count at the same time. For example, 18.06 and 18.700 both teach Linear Algebra but 18.06 emphasizes matrices more, while 18.700 focuses on abstract linear algebra. You can't have both classes count towards institute requirements, so you might want to reconsider taking the 18.06 ASE and then taking the 18.700 class.

3 Should I take an ASE?

Some things to consider before deciding to take any particular ASE:

- What are the pros and cons of taking a class versus skipping it?
 - Actually taking the class will give you a more solid foundation than studying for the ASE. (It's a class at MIT, after all...) How will skipping the class affect your ability? When necessary during more advanced classes, are you prepared to quickly pick up anything you're unsure of on your own?
- Do you know the material already? (Check [MIT OpenCourseware](#) and other sources!)
- Are you prepared to take more advanced classes?
- Are you ready to spend time studying for the ASE? (Including homework, if any.)
- Might you ever need to take the class? (For 18.03 or 18.06.)
- Most freshmen don't take any ASEs, so you will meet fewer of them if you skip basic-level classes. Classes and homework make up much of MIT life, and may affect the crowd you interact with.

4 Conclusion

There are many things you need to find out about enrolling at MIT, which may include possible choices to make, such as ASEs. Read up the MIT website to find out about classes, GIRs, ASEs and so on.