CMMB 527 Course Profile

The course description and Winter 2021 syllabus of Cellular, Molecular and Microbial Biology 527, **Immunology**, can be found here.

Generally offered in: Winter semester

Prerequisite(s): BIOL 311, 331, CMMB 343; and 3 units from CMMB 411, BCEM 431 OR 443

Antirequisite(s): None

Interview with Dr. Constance Finney

In your own words, can you give a brief summary of what this course is about?

This is a required course of the CMMB program, and the only immunology course taught out of Biological Sciences. The course gives you an overview of the immune system, from beginning to end. Students learn about the core concepts in immunology, using real world examples.

What is the main skill you want students to take away from this course?

I think there are probably 2 main things. One is understanding how to break down the complexities in scientific data. When you have something like a scientific paper that's trying to convey complex information or you have a complex dataset, you need to be able to break it down and bring it back to the fundamental immunology concepts that we discuss in class. In class, we read and analyse scientific papers and design experiments based on complex datasets for just this reason. The second one is being able to communicate your ideas effectively. We have many discussion classes to allow students to share their ideas orally. The assignments for the course are mostly long-answer style questions to improve written communication. We really want students to become good communicators and science advocates.

Will a textbook be required for the class?

There is a recommended textbook. Students do not need to purchase it, but it is recommended on the course outline because it is the textbook that I have based my lectures on.

What aspect of the course do you think students struggle with the most?

I think getting to the deeper level of thinking is tricky. It's the same for all the 500-level courses. You're having to go that extra mile to take in new information and, not only learn it, but also integrate it into the bigger immunology picture. In the course assignments, you'll then need to apply the concepts you have learned to new immunological problems.

Also sadly in immunology there's a lot of jargon, so there are a lot of new words that come up. I try to limit it as much as I can, but there's an immunology language that is tricky to get to grips with at the beginning. I think that once you go through the course, you start getting used to it, but it's a bit of a shock at the beginning with all the new vocabulary that you need to learn.

What can students do to be successful in this course besides attending lectures?

Try to see the bigger picture. Students generally learn things lecture by lecture, but I don't think that's necessarily going to help you because something I taught you in lecture 2 could really have an impact on lecture 34. The course is structured in a specific order, but I am always referring to previous lectures and building/adding new information. Students should always be thinking back to how things connect and how things are integrated, so you can get more of a complete picture and not just individual snapshots.

What do you think is the most effective way that students can prepare for an examination in the course?

It's tricky this year, just because online course delivery is clearly different than in-person. If it was in person, I would say you need to know the material so that you can easily go back and forth between different concepts. If you don't know your material well enough, it's very hard to think more deeply about a complex problem. Online is going to be slightly different, because you pretty much have access to the material, so we're going to be expecting you to be able to make connections and see things that we may not have specifically taught you in class. We'll have taught you the concepts, but you will need to apply that knowledge to new situations. It's important to be able to see the concepts and understand why things are the way that they are and how they work, so you can get to that higher level of understanding.

Are there other resources that students can use besides the textbook and lecture notes to get that level of understanding, or are the textbook and notes sufficient?

I would say that you don't need to go anywhere else. I don't expect students to go out and find their own materials, we try to provide as much as we can. I always tell students to look in the textbook if they don't understand how I've explained something but not to go looking for extra information. To be honest, the textbook has way too much information. It may be a way to find an alternative explanation, but if there's more detail in the textbook than in the lecture notes, that doesn't mean you're going to get a better grade because you've read it. I try to stay away from the fine detail and stick with the concepts because, again, for some people it's easy to learn lots of little details but miss the big picture. You can know all the molecules involved in a pathway but you don't really understand how important that pathway is within the immune response, so you don't know how it can impact disease management like vaccination or medications, for example. I post videos and make comprehensive lecture notes, and we try to make sure that we provide students with enough material to understand what we are teaching. Students are always welcome to ask me for extra resources though if they don't understand the way I've explained something. There are obviously multiple ways of explaining something and I would really urge students to come to me or their TA if there is something they don't understand, because we can guide them to many different source materials.

Online delivery

***** The features of the class could potentially differ from these responses as the format of the course is solidified.

Will classes be in person or delivered online? **Online lectures, in-person labs**

Will lecture by synchronous or asynchronous? **Mixed**

Additional comments:

We will have mixed lectures. Normally we would have lecture three times a week for 50 minutes each. What I'm doing this year is re-writing all the lecture material as "storyboards" so the students have proper text to read for the upcoming term. Once a week we'll have discussions on that material. I will expect the students to read the material before the discussion but they will have access to the D2L discussion boards to post any questions they have before the discussion so we can make sure everyone has understood the material/language used in the lecture notes. The discussion will be used to put the lecture notes in context using real world examples. Immune responses to COVID-19 are likely to come up a lot this year!

Will this course have a lab or tutorial component this Winter 2021 semester?

Yes, it will have a lab component.

What will the laboratory component of the course look like? How has it been adjusted from previous years?

As of today, we are preparing for synchronous in-person labs. Obviously this may change if there is a change in government/university guidelines. If we go ahead the way we have planned, we have reduced the number of labs from 8 to 4. We have chosen four labs that reflect a variety of immunological techniques. Importantly, the labs can be performed by an individual student to account for physical distancing; in previous years, students were in groups of two. We'll have ten people in each lab section as opposed to twenty in previous years. We'll essentially have two groups (A & B) on alternating weeks. We have all the safety measures in place to maximize physical distancing and ensure the labs are safe. We've also shortened the labs a little bit to give us time to clean and disinfect between sections. Normally, in the lecture portion of the course, I dedicate some time to immunological techniques but these have been added to the labs now. There are three lab sessions which will be via zoom discussing a number of different techniques we cannot teach in person. We're trying to be flexible this year so that if guidelines change, we have alternatives.

Are there other ways the course has been adjusted from previous years?

We used to have students do things in small groups, and now students will do things on their own and have all their own reagents/materials. We also used to have TAs/technicians present techniques at the front of the class with students observing crowded around them. We're going to film those now and show the film during the lab and discuss it.

Do you have any other advice for incoming students taking CMMB 527?

I would say, try not to stress from day 1. I know the course has a reputation of being difficult and that for many students it's in the final semester of their degree, but I don't think you should come into the course thinking that you're not going to do well. Since it's a required course, there are some people who want to be there and others that don't, but the TAs and I are really there to support everybody who's learning. For

the students who come to us and ask us questions and ask us for help, we've always found a positive outcome. Sadly, I feel like there are a lot of students who are either a little shy or scared, or don't really know how to express their concerns. Whether those are wellness concerns or concerns about the course in general, I would say the earlier they can come and talk to us, the better. The sooner we know what is worrying them, the sooner I can help them get back on the right track. We can find resources directly or point them to appropriate resources/services, but it gets more difficult the later it is in the course.

Do you have any stand-out memories from teaching this course?

I really enjoy teaching one of the lectures I call "Immunology in society" where we talk about immunological things that come up in everyday life, and it's a free-for-all discussion. I plan it in the sense that I have topics that I propose for discussion, but it's really student-led. I always find those a lot of fun because I learn different things and students talk about what matters to them, and a whole bunch of topics come up which I'm sure students might not necessarily associate with immunology. That's one of my favorite lectures.

Do you have any other things to say about this course?

I hope that a lot of students like this course. I think it's a fun class, if you can remove yourself a little from the stress (which I know is really tough!). And again, the technicians, TAs, and I would like everybody to succeed so we would like people to feel like they can come and see us if they need more support. I think a lot of students don't necessarily like the course while they are taking it, but I've gotten testimonials from students afterwards who have said: 'You know, I actually realise I really enjoyed the course, but at the time I was stressed and couldn't appreciate that. Now that it's over and I've moved on to other things I really value what I learnt.' That's always great to hear.

We have a mix of third, fourth, and fifth year students in this class. People shouldn't worry when they take this course; I have found no correlation between the level of study and grades. I tell students this at the start of the course, it's really about embracing the course and taking everything on board. We have people from different levels of learning and from different programs, which to me is an asset to the course and allows for rich discussions. As long as you've got your course requirements and you're ready to put your thinking hat on, you're good.

One thing I want students to know is that we appreciate how important their GPA is. The CMMB program has many students who are looking to get into Medicine, which adds a lot of pressure. I sometimes find this course particularly difficult to deliver because while giving the lectures is always fun and interesting, I know that when it comes to grades and percentage points, every one of those is someone's dream of getting somewhere.

Finally, immunology is fascinating. I mean we're in the middle of a pandemic, so this is actually a great time to be teaching it. We'd like everybody who comes out of this class to be able, as a citizen, to talk to their friends, family, and neighbors with their immunology knowledge in their back pocket.

This interview transcript was edited for clarity and brevity