Hello intrepid Neuroscience and Behavior majors!

Congratulations on your acceptance and welcome to Columbia! We are the Columbia Neuroscience Society, and it's our mission to provide ***you*** the information you need to succeed if you're considering the Neuroscience and Behavior major.

Below we've assembled our collective knowledge and advice through answering some of the most Frequently Asked Questions we get, as honestly as we can! This is made for students, by students, and without departmental/advisor input to give you the most useful information possible.

If there's something you want to know that you haven't seen answered here, send us an email at thecns@columbia.edu, and we'll add an answer to this document ASAP. To stay in the loop, get on our mailing list for cool neuro-themed events, and follow us on Facebook (The CNS of CU) and our social media platforms (Instagram: cns_cu) for the most up-to-date information about our events and how you can be involved!

Q1. What Classes are Required for the Major?

A. Simply put, only ten classes are required for the major — five from the psychology side, and five from the biology side. You can look at the details from either side, but we recommend the psychology website because it's better organized and generally kept more updated, but they both have the same content.
B. Psychology's version: https://psychology.columbia.edu/content/neuroscience-behavior-major
C. Biology's version: http://biology.columbia.edu/pages/neuroscience-and-behavior-major-requirements
D. **Note*: While not officially listed, chemistry is an 'unofficial' requirement, as it is in some form a prerequisite for Introductory Biology (which is a required class). Take it as soon as possible! If you're not so confident in your skills, take the year-long CHEM UN1403 General Chemistry I and CHEM UN1404 General Chemistry II sequence. If you're a chemistry champion, consider either the one semester CHEM UN1604 Intensive General Chemistry course, OR (this is truly expert mode) skip straight into CHEM UN2045 Intensive Organic Chemistry I. If you're not sure where you fit, the Chemistry Placement exam is a good resource to figure it out. Details on chemistry can be found here.

Q2. What if I'm pre-med?

A. Awesome! Approximately 80-90% of the Neuroscience and Behavior major is comprised of pre-med students, so you'll be surrounded by peers. In addition to the major requirements, you'll need to take the pre-med requirements. They're all listed here:

https://www.cc-seas.columbia.edu/preprofessional/health/premedical_curriculum, but we've got a breakdown for you, right here.

B. In addition to your N&B major requirements (and a year of chemistry, which is a sort-of N&B requirement), you'll need to take:
    a. One year of **General Physics** and one year of **Physics Lab.** The easiest version of this is "pre-med physics," which is the 1200 level. If you want to challenge yourself and feel confident in your physics abilities, the 1400 and 1600 levels also fulfill this requirement. We recommend taking these classes in your ***sophomore*** year and at the same time — while you can take it in a different semester, the material in one will help you with the other.
    b. One semester of **Biology Lab.** The major already includes a year of biology, but none of the labs are required for the major — as a pre-med you need to add this course. Luckily, it's only one semester. We recommend that you take it concurrently with biology in either your fall or spring semester of your ***sophomore*** year, with a preference for fall semester — that's where the material is most useful.
    c. One year of **Organic Chemistry** and one year of **Organic Chemistry Lab.** These are going to take up a lot of your time — there's a reason they're the 'standard' weed out course. For that reason, we do NOT recommend taking them at the same time as Biology, another time-intensive course. Instead, we recommend them in your ***junior*** year.
    d. One semester of **Calculus.** Get this out of the way early, or you'll forget everything you learned in high school. Depending on your level, take either Calculus I or III, preferably in fall semester of your ***freshman*** year.
    e. *Recommended: One semester of **Biochemistry**. Our Biology course is rigorous enough a lot of medical schools do count it, but some are sticklers on this point. You need an elective biology course for your 5th biology course within the N&B major anyways, and a semester of Biochemistry both fulfills that requirement *and* the pre-med requirement, so we highly recommend it for pre-meds. Take it whenever it fits in your schedule, but we recommend fall semester of your ***senior*** year to avoid unnecessary stress.
    f. All the other requirements are met by your major or the core— lucky you!

C. As a pre-med, your grades and eventual MCAT scores will be some of the most important aspects to your success in applications. While research experience, hands-on EMS experience through CUEMS, or hospital volunteering all look great on those applications, they should not be prioritized over your GPA. One thing to look out for is who will be writing your letters of recommendation, another important aspect to your application. We recommend meeting with a pre-professional advisor *as early as possible,* even before you declare pre-med, to start fostering those relationships.

Q3. What if I'm pre-PhD?

A. You make up ~10% of the N&B major, and your requirements are a little murkier than those of a pre-med. Generally, how many non-major courses you need to take depend on which direction you want to go with that PhD. No matter what you want to specialize in, one major difference from you and your pre-med friends is that you do not have to take any of the lab courses which are associated with Chemistry, Biology, Physics, and Organic Chemistry. That might seem counterintuitive, but we at the CNS have asked multiple sources who all say the same thing — these classes *are not* necessary for pre-PhDs. Since they're time-consuming and not particularly easy, we recommend avoiding them entirely.

B. Are you more on the **cognitive neuroscience** side of things? Interested in doing research in human subjects? You likely *do not* need Physics or Organic Chemistry for most programs. Instead, we recommend you take elective psychology courses related to your field of interest, and improve your statistics/computer science skills — some of the most sought-after traits in graduate students. We recommend you learn how to program in R, Matlab, and/or Python, and take advantage of the advanced statistics classes for behavioral scientists the psychology and statistics departments offer.

C. Are you more into **cellular and molecular neuroscience**? Minus the lab sections, you should be effectively taking what the pre-meds are: physics, math, organic chemistry, and biochemistry. Learning programming continues to be a good idea for you too.

D. What about an interest in **intermediate animal models**? You're in a somewhat awkward in-between spot, where you may or may not need the more 'hard' science additional courses in biology, physics, and chemistry. If you feel you can excel in them, go for it. Check out programs you might eventually interested in to see what their requirements include, and try talking to the major advisors/your principal investigator for advice.

E. So outside of classes, what should you be doing? Unlike your pre-med counterparts, your **research** is far more important than your grades. While you want to be doing well in classes (at least above a 3.3, and especially in your neuroscience-related courses), getting into a lab during the year spending ~10 hours a week there and spending summers working there full-time should be your top priority. Most graduate programs want at least two letters of recommendation from senior scientists you've worked under, and these are usually *the most important* thing in your application. Don't worry about getting published (most people aren't by application time), do worry about finding a project in the model organism you might be interested in (from top down: human, monkey, rat, mouse, c.elegans, fruit fly, cellular/protein work *in vitro).* While any lab work is useful, the skills you'll gain in one mouse lab translate much more easily to work in another mouse lab, even if it's in a very different area of research. You'll also want to make sure you have a mentor who cares about teaching you and understands the constraints on your time, a lab culture you feel comfortable in, and that you will receive suitable recognition for any work you do. Ideally, talk to another undergraduate who has been previously or is

currently in the lab for the inside scoop. Work hard and ask questions, even if your research doesn't succeed, your rec letters will be excellent — and that's really what matters.

Q4. What if I'm both?

A. MD-PhD programs have been growing in popularity lately, and for good reason! If you think being a doctor and being a scientist are both cool pursuits, this might be for you. Generally, you'll be doing everything that a pre-med would do (see advice from the pre-med section), with extra-emphasis on research experience (see advice from the pre-PhD section).

Q5. What if I'm not going down either of those paths?

A. You're in the remaining 10% of the major, who are going down another path. Whether that be pre-professional (business, law, etc.) or just because you think neuroscience is great, we're happy you're part of the major too! Your requirements are much more flexible than those of a pre-med or pre-PhD student. If you're interested in graduate schools, check out the recommendations for your possible programs for supplemental courses to take, or a minor which might supplement your N&B major. Focus on finding an interesting internship for the summer which relates your interests, and don't be afraid to take courses which don't fulfill any requirements - you have the space!

Q6. What if I'm not sure?

A. Luckily, you have a little time to decide. If you're thinking pre-med, you'll want to take the courses along that path. If you're also considering a PhD, you'll want to join a lab as soon as you can to try out if you like research or not. It's better to start taking the courses for pre-med and dial back if you choose to not go down that path, since it's easier to have extra courses over scrambling to make them up later. Try talking it out with a friend or your advisor, if they're helpful, and don't be afraid to get off the pre-med track if you choose it isn't right for you.

Q7. When should I take what classes?

A. There's no real 'right' answer to this question, and classes can be taken whenever they fit in your schedule. Keep in mind that many electives and seminars are only offered once every few years, and some are only offered once at all. Same goes for global core classes, so keep an eye on your core requirements as well as your major. In our experience, taking a good professor at a not-great time is generally better than fitting a horribly-taught class nicely into your schedule, but don't try to completely upend your sleep schedule — if you're not a morning person, taking all 8:40s will not make you one, it will simply make

you miserable. Trust us on this one. Here's a sample schedule which has worked well for many CNS members in the past:

a. *First-year:*
    i. If you're taking both semesters of **General Chemistry** (as most students are), you'll want to start this your first semester at Columbia. Because it's a prerequisite for Introductory Biology I&II, which is itself prerequisite for Neurobiology I&II and all biology electives, you want to get it done early. If you're taking the accelerated courses, your first semester is still the best time since your AP/IB/Advanced chemistry knowledge is freshest in your head.
    ii. **Science of Psychology.** This class is a prerequisite for pretty much everything else in the psychology half of the major, so the sooner it's finished, the better. If you can fit it, we recommend taking this your first semester. While you'll likely be on the waitlist, persistent emails to the professor and consistently showing up to class will net you a spot 9 times out of 10 — it's always worked for us.
    iii. In your spring semester, we recommend taking either **Behavioral Neuroscience/Mind Brain Behavior (MBB).** Either course counts towards the major. While MBB has a reputation as the 'easier' of the classes and is frequently taken by non-majors to fulfill the science requirement, the difficulty level can vary wildly depending on the professor. Behavioral Neuroscience is more truly intended for N&B majors, and without being very difficult it serves as great preparation for Neurobiology. While either class is fine, we personally recommend Behavioral Neuroscience for a more thorough and useful intro course.
    iv. If you need it, take one semester of **Calculus** your first semester. You'll forget most of what you learned in senior year of high school pretty quickly, and those of us who postponed this requirement generally regret it. Get it done early.
    v. *If you're close to finishing the language requirement, finish the 1-2 semesters left in your first year. Like calculus, this knowledge leaves your brain quickly if you aren't using it, and you don't want to deal with the time a language class takes your sophomore year if it's avoidable.
    vi. **Whether or not you take 4 or 5 classes your first semester is entirely up to you. We recommend trying out 5, and dropping down if it's too much. Pre-meds, you have a fuller schedule which will only get tougher from here, so we more strongly reccomend giving 5 a good shot for some wiggle room later.
b. *Sophomore:*

i. This is when most students face the infamous Introductory Biology I&II, colloquially known as Mowsh Bio, after its professor for the last 30+ years, Deborah Mowshowitz. Much has been said about this course, some fair, some less so. Yes, it is difficult, and yes, it will take up a *lot* of time (estimates range from 1.5-3x the time you'll spend on other courses). The best advice we have is to fully do and understand the problem sets, and find a good group who you can study with. Make the time, take a deep breath, and know that thousands of students have endured this before you and come out just fine.

ii. The rest of your schedule should be built around Bio. In addition to **Introductory Physics** if you need it for pre-med/PhD preparation, now is a good time to take an easier 2000-3000 level psychology course, get art/music humanities finished, or take a low-workload global core. If they won't strain you, **statistics** or **programming** (for pre-PhDs especially) are also good choices in your sophomore year.

c. Junior:

i. Here you'll be taking the **Neurobiology I&II** sequence. While a welcome relief from the time commitment of Introductory Biology, the first semester is a standard memorization-heavy biology course. The second is more survey-based, and many neuroscientists come in to guest lecture. It's a favorite of many N&B majors for a reason!

ii. If you need it, you'll be handling **Organic Chemistry I&II** here too. This is likely to be your most difficult and time-consuming class junior year, so plan accordingly.

iii. Round out your schedule with a Psychology seminar (we highly recommend taking these since they're fun, interactive, low-stress, almost always net A-range grades, and are a great way to connect with professors) and Core requirements.

d. Senior:

i. If you need **Biochemistry**, fall senior year is the time to take it. Otherwise, take an **elective biology course** for your 5th biology requirement, Circuits in the Brain is generally interesting for neuroscience majors, when it's offered. Whatever you still have left in the major or for the core, finish it now. Fill the rest of your schedule with either GPA-boosting STEM courses if you're pre-med, take four courses each semester and focus on your research/graduate applications if you're pre-PhD, or just take some extra courses for fun!

B. What if I'm behind that schedule already?

a. This schedule is by no means absolute, and it's designed for those who already know they're interested in the major coming in, which many people don't decide

until late in their first or even into their sophomore year. This schedule can be pushed back a year and started in your sophomore year instead, with the only modification in taking the 5th biology course concurrently with Neurobiology I or II in your senior year.

Q7. How do I get involved in research?

A. This might be one of the most common questions we get here at the CNS. The best time to look for research is at the beginning or end of an academic year, when seniors have left open spots in labs and/or labs are looking for full-time summer intern researchers. We have a number of suggestions for finding that coveted lab spot:
   a. Cold-emailing is always a tried-and-true tactic which works surprisingly well. Briefly introduce yourself, take a few sentences expressing your *specific* interest in their lab, and express your high-level of commitment. Generally these should be sent to the Principal Investigator of a lab, but oftentimes these are the busiest people. Dig a little deeper into lab websites and look for a lab manager if that lab has one, and try sending the email to both PI and lab manager. A fairly comprehensive list of labs by topic of interest can be found here: https://www.neurosciencephd.columbia.edu/faculty
   b. Not to toot our own horn, but the CNS hosts an annual Research Opportunities Fair every fall semester for just this purpose. We bring together lots of researchers looking for undergraduates with undergraduates looking for research, and give you an opportunity to make those connections. Keep a lookout on the CNS listserv for exact dates, but it's usually held in Lerner the weekend before Thanksgiving break.
   c. When labs have openings, they often contact the CNS to spread the word. We always include this information in our weekly email blasts, so be sure to skim those for lab information if you're on the hunt.
   d. Ask around! Upperclassmen are commonly already in labs, and they'll often know about informal opportunities first. CNS executive board members, N&B peer advisors, and your TAs are all good resources if you don't know very many upperclassmen N&B majors already.

Q8. How do I find my major Advisor?

A. Unlike majors housed a single department N&B majors have one person for the psychology side, and one for biology. In our experience, they are best at answering questions about their specific realm, and will bounce you to the other department if it's a question outside their purview.

- Psychology:
    - Professor Caroline Marvin
      Location: 317 Schermerhorn Hall
      E-mail Address: cbm2118@columbia.edu
    - Professor Alfredo Spagna
      Location: 315 Schermerhorn Hall
      Email Address: as5559@columbia.edu
- Biology:
    - (CC) Professor Stuart Firestein
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    - (GS) Professor Debby Mowshowitz
      744D Fairchild
      Telephone 212-854-4497
      Email: dbm2@columbia.edu
    - Professor Alice Heicklen
      Director of Undergraduate Studies
      Department of Biological Sciences
      ah2289@columbia.edu
      744 Mudd

B. Even though these are 'official' advisors, the most useful advice often comes from your PI or a professor who you know well. Don't be afraid to ask these people questions. They're phenomenal resources for you.

Q9. I don't know any upperclassmen, how do I contact a knowledgeable N&B student?

A. There are lots of ways! The executive board of the CNS is a great place to start, since we voluntarily choose to lead outreach efforts in the Columbia community. Come up to us at any event and ask away, if we don't know the answer we'll do our best to find out for you. Another great resource are the Peer Advisors — a program run through the psychology half of the major. An updated list can be found here: https://psychology.columbia.edu/content/advising under the Peer Advisors tab. These are people who have volunteered to help out with exactly the kinds of questions you might not want to ask the official advisors, and love helping out. Another great resource are your TAs in N&B classes. They often can give great advice and/or connect you to their peers to best answer your questions.

We hope this FAQ was useful for you! As always, email us at thecns@columbia.edu with any questions or concerns.