Computational Social Science draws on a broad set of skills and knowledge, and our incoming cohorts are diverse in terms of academic background and previous training. This document provides some information on what you can expect when you enter the program, with tips on how you might prepare for it during the summer. Note that, apart from the Math Camp, the suggestions below are optional—you have been admitted to the program because we were confident in your ability to succeed in it. However, taking some time to get ready can make the start of a program easier.

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1. Getting ready for the year: Courses, Departments, etc.

As you are planning your next year (or two), it is good to keep in mind the general course schedule you will be following.

Each quarter of the program, you will register for one methods course (programming, statistics, etc.), one social science elective, and the Computational Social Science Workshop. In the first year, you will also register for our ‘Perspectives’ Sequence, while in the second year you can register for any Masters Level course of your choice. Further, most of our students follow a set methods sequence in their first year: Computer Science with Social Science Applications (CS-SSA 1 and 2), and Large-Scale Computing, unless you place out of these.

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<td>Methods Course (generally CS-SSA 1)</td>
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<td>Methods Course (generally Large-Scale Computing)</td>
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<td>Social Science Elective</td>
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<td>Perspectives on Computational Analysis</td>
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<td>Methods Course</td>
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<td>Social Science Elective</td>
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If you wish to peruse previous course offerings, you can do so [here](#). You can also browse for future course offerings on the departmental websites (list not exhaustive):

- [Social Sciences Division](#)
- [Harris School of Public Policy](#)
- [Booth Business School](#)
- [Computer Science](#) (note: students may register for CMSC courses as long as they meet the prerequisites. MPCS courses follow a separate process communicated each quarter.)
- [Toyota Technological Institute of Chicago](#)
- [Statistics](#)
- [Financial Mathematics](#)

To help you get a sense of courses that fulfill the social science elective or methods requirements (and sometimes both), see course designations from the past year [here](#). Note that
Economics students applying for the MACSS-Econ concentration in their second year are eligible to take additional math courses (e.g. real analysis) instead of the social science elective. These exceptions must be approved by the Economics instructional staff.

2. Quantitative Methods

The program will require you to take a **math placement exam**, and you are required to attend a Math Camp in preparation for the exam:

- **Computational Math Camp**: August 30 - September 17.  
  Instructor: Benjamin Soltoff ([soltofbc@uchicago.edu](mailto:soltofbc@uchicago.edu)) | Syllabus 2020
- **Economics Math Camp**: August 30 - September 17.  
  Open only to students enrolled in the MACSS-Econ concentration | Syllabus 2020

If you wish to brush up a bit on your math before entering the camp, it is best to look at the syllabus to see the topics you should focus on. If many topics on the syllabus are not familiar to you, you should still register for the camp. Students who do not place out on the exam during orientation week will register for an additional math course during the Fall quarter. Reach out to Benjamin Soltoff if you have any concerns.

3. Computer Science

Some of you are coming into the program with significant programming experience, while others have limited to no exposure to it. MACSS is committed to enabling each student to pursue computational training at a level that is most appropriate for them.

At the beginning of the year, you will have the option to take a **CS placement exam** in any of the commonly used languages, including Python, Java, Ruby, C/C++, etc. You **should not** attempt to take the placement exam without first familiarizing yourself with the format of the exam and doing some practice problems—you can find all the information here.

While some students will place into more advanced programming courses, most students will take a two-course intro sequence, “Computer Science with Social Science Applications” 1 & 2 (MACS 30121 and MACS 30122). These courses **do not assume any previous knowledge of programming**. However, if you are excited to start learning, you can take a look at some of the following:

- **Programming Books**
  - Python for Data Analysis
  - Think Python
  - R for Data Science
  - The Tidynomicon: A Brief Introduction to R for Python Programmers
- **Tools**
  - Jupyter notebooks
  - Bash/Terminal and Shell
Whatever the level of your experience with programming, if you’d like some practice, we recommend [Kattis practice problems](https://kattis.com), as this is the format of problems you’ll encounter in the CS-SSA core-programming sequence as well. Another fun way to practice your coding skills is [Codewars](https://www.codewars.com), which will give you problems to solve at different levels of difficulty and—once you submit working code—will show you how others approached the problem.

### 4. Social Sciences

While the emphasis on ‘Social Sciences’ is one of the pillars of MACSS that distinguishes us from many other programs, it is maybe the most difficult one to ‘get ready’ for, especially if you’ve had limited exposure to Social Science before.

While the first course in our ‘Perspectives’ Sequence (Perspectives on Computational Analysis) will introduce you to the fundamentals of Social Science research and thinking, you will also select and complete Social Science Electives throughout your program. The University of Chicago’s social science programs are some of the best, and most challenging, in the world, so it might be helpful to you to familiarize yourself with both the diversity of Social Sciences, and the Social Science offerings at the University.

Some texts that might be helpful:

- [The elements of social scientific thinking](#)
- [Social Science and Its Methods](#) - Chapter from “Social Science: An Introduction to the Study of Society”
- [Introduction to Sociology](#)
- [Introduction to Psychology](#)
- [Quantitative Research Methods for Political Science, Public Policy and Public Administration](#)

For MACSS-Econ students who want to refresh their knowledge on specific topics over the summer please see the list below. Please note that these are content that will allow you to feel prepared for the Economics Math Camp.

- Linear Algebra: “Linear Algebra and its Applications” (Strang)
- Calculus: “Calculus and Analytic Geometry” (Thomas and Finney), “Calculus” (Spivak)
- Probability and Stats: “Statistical Inference” (Casella and Berger), “Introduction to Mathematical Statistics” (Hogg, McKean, Craig)
- Real Analysis: “Principles of Mathematical Analysis” (Rudin)
- Microeconomics: “Advanced Microeconomic Theory” (Jehle and Reny)
- Macroeconomics: “Advanced Macroeconomics” (Romer), “Lectures on Macroeconomics” (Blanchard and Fischer)
- Metrics: “Econometrics Analysis” (Greene), [Bruce Hansen’s lecture notes](#).
Finally, you might want to take some time to either explore your existing interests in more depth, or to expand your interests by engaging with scholarly work and different kinds of media. The amount of resources is endless, but here are some of our suggestions:

- Browse the departmental websites, within the Social Sciences Division, Booth School of Business, or Harris School of Public Policy. Take a look at our faculty, their interests, labs or papers they have written.
- Look up top journals in your discipline(s) and look through recent abstracts—some even feature open-access articles. Once you have your UChicago login, you can use the UChicago VPN and have full access to a wide variety of journals.
- Podcasts can be a great way to hear about new research, different perspectives, and all sorts of ideas. Here is a bit of an eclectic selection from across different fields, but there is a lot more out there!
  - Big Brains Podcast
  - Social Science Bites
  - The Social Breakdown
  - The Annex
  - Speaking of Psychology
  - Freakonomics
  - LSE Public Lectures and Events
  - Weekly Economics Podcast
  - P.S You’re Interesting

As you read, you can also start developing citation-management skills: whether it is creating a .bib file or using one of many citation managers.

5. English, Writing, etc.

Many of you are coming to MACSS as native speakers of a language other than English, quite a few might not have taken any courses in English, and even if you’ve been interacting and learning in English your whole life you might not feel as comfortable with academic writing as you might want to be. These are skills that you will continue developing throughout your two years in the program, and actively working on them is a very worthwhile investment.

The University offers an Academic English Pre-Matriculation Program, as well as a course on Academic and Professional Writing throughout the year. If you want to work on your English and Writing skills on your own (before or during the program), you might find some of these free resources useful:

- Using English for Academic Purposes — a wonderful resource that offers plenty of advice, examples, and exercises that you can work through and it is, as the name might imply, geared specifically for the academic context
- Purdue OWL (Online Writing Lab) — another extensive resource which you can either work your way through, or consult as needed. The website covers a wide range of topics—from grammar to sentence structure to crafting arguments in your paper, with specific tips for students whose first language isn’t English.
• **UW-Madison Writer’s Handbook** — features straightforward tips and clear examples

• **UMaryland Online Workshops** — If you are looking for something more interactive, UMaryland features free online workshops, e.g. “How to Revise and Self-Edit” and “How to craft an argument,” in addition to their very accessible text resources.

• **Write and Improve** — a free tool for English Language Learners to practice and improve their writing

• **Oxford Collocation Dictionary** — ‘Collocations’ are series of words that frequently go together, and a collocation dictionary can help you craft natural-sounding sentences and will be a great help with so-called ‘phrasal verbs’