Creating Effective Advising Tools

THE New Mathways PROJECT

Purpose: Scaling math pathways eventually comes down to a student enrolling in a math course at the appropriate level aligned to his or her program of study. Enrolling students requires that advisors and students have clear and easy-to-use resources to help them understand the options and to make good decisions. *These resources rely on institutional leaders making key decisions about how math pathways align to programs of study. For guidance on making these decisions, see the Program of Study Inventory Guide.*

Resources for advisors and students must be customized to the college. This tool outlines a general process for developing those resources and includes models that illustrate some key characteristics for effective communication. The models assume that a student is meeting with an advisor. We suggest that similar principles be used to create materials to support self advising, if appropriate.

Users: Advising coordinators (with input from advisors, faculty members, and students)

Process-at-a-Glance:

Necessary Input Resource:

- *Programs of Study Inventory* (see *Programs of Study Inventory Guide* tool)

Models of Resources:

Note: These models make use of color coding to communicate different pathways, a strategy that was highly recommended by advisors. Models printed in black and white may result in text that is difficult to read. The color coding used is:

Math 1342/1442: Statistics (orange),

Math 1332: Quantitative reasoning [contemporary mathematics] (green), and

Math 1314 and calculus sequence: STEM pathways (blue).

- Making the Most of Your Advising Appointment (pp. 4–5) - *For students to use before meeting with an academic advisor.*
- Advisor–Student Conversation Guide (pp. 6–7) - *For advisors to use in conjunction with the decision tree to place students in the appropriate math course.*
- Advisor Decision Tree for Math Pathways (p. 8) - *For advisors to use in conjunction with the decision tree to place students in the appropriate math course.*
- Sample Metamajors List (p. 9) - *For advisors and students to use as a reference to determine which majors fit for each mathematics pathway.*
- Metamajors *sheets* (pp. 10–13) - *For students to use as a reference of the math requirements for their majors.*
- Math Pathways by Metamajor *handout* (pp. 14–15) - *For advisors to use as a reference for math pathways requirements.*

Instructions:

Note on terminology: We encourage colleges to establish "metamajors," or groupings of majors with common characteristics and requirements, to make it easier for students to make selections based on broad interests. For example, a student might select a social sciences metamajor rather than specifically deciding to major in sociology. This approach makes the decision less overwhelming for students and also makes it easier for them to make early decisions based on general interests.

1. Refer to your institution's *Program of Study Inventory* (see *Program of Study Inventory Guide* tool). This inventory lists all programs of study and the math course requirements for each program. You will need this information to create the resources outlined in this tool.

2. Draft a decision tree or similar resource to help advisors determine the appropriate math pathway for a student. Focus on capturing accurate and complete information.

   Model provided: Advisor Decision Tree for Math Pathways

3. Verify that the information is accurate and complete by checking with several individuals representing advising, other student support programs, mathematics faculty, etc. In particular, check that all current options for students are represented.

Warning: Once a student's metamajor and placement are determined, there should be one clear default mathematics course. In some cases, students may have options for special programs or between different delivery methods for the course. In general, it is best to offer no more than three options. The decision tree is a good indicator of whether your programs are too complicated and overwhelming for students. If the decision tree becomes confusing to follow, there may be too many options, and institutional leadership should consider long-term plans to simplify the options.

4. Refine the decision tree to enhance usability and clarity. See effective practices for communication below.

5. Draft other resources for advisors and students. Suggested resources include:
   - Resource for students to prepare for their advising appointment(s)
     Model provided: Making the Most of Your Advising Appointment
   - Brief guide to support use of the decision tree
     Model provided: Advisor–Student Conversation Guide
   - Resource for students to explain their math pathways
     Model provided: Metamajors *sheets*

6. Test all of the resources with advisors and students under realistic conditions (i.e., no special preparation). One strategy is to ask advisors to use the tool for different scenarios. Ask for feedback to improve clarity and usability.

7. Develop training and ongoing support for advisors who will use these resources.

8. Revise the resources, as needed.

Other considerations:

- Do all students meet with an advisor? If not, what resources will students need to make their own decisions about math pathways?
- Do opportunities already exist to gather information about students' goals and experiences? For example, could you add questions to mandatory placement assessments and make that information available to advisors?
- What information about the content of the different mathematics courses would enhance advisor–student conversations?
- If courses are offered in multiple versions such as both online and classroom-based instruction, what information would help advisors and students decide which option is best?

Effective practices:

- Design resources to meet the needs of those who would benefit from them most (e.g., the advisor with the least experience or has a very large caseload, the student who knows little about the college).
- Provide guidance on how these tools and resources should be used and if they would replace existing resources.
- Visually display information so it is clear and engaging.
    - Use consistent language, structures, and formats across different tools and resources.
    - Use a mix of text and graphics to highlight the important information.
    - Use complete course names when possible. Refer to courses by course numbers and titles.
    - Color coding can be a useful way to connect common elements across multiple resources. Ensure that text is legible in print both in color and in black and white.

MODEL OF STUDENT RESOURCE

Making the Most of Your Advising Appointment

Academic advisors can help you be successful in college in many ways. They can help you think through your career and life goals, help you understand degree and course options, and identify resources you might find useful. Our institution requires new students to meet with an academic advisor before they register for classes and have a conversation about your goals so your time in college will be well spent.

You can make the most of your appointment time by preparing for this meeting. Preparation includes thinking about your interests and goals, and preparing questions you want your advisor to answer during your appointment. The topics and questions below are typically part of advisor–student conversations. They are presented here as suggestions to help you prepare.

** Ultimately, you decide on your goals and the path you will take to achieve them. Your advisor can support you best if he or she understands who you are and what your goals are. **

Things to think about before your meeting

- What are your goals? What are you interested in doing?
  - *You do <u>not</u> have to have a specific major selected! Think about your general interests and what kind of career you might be interested in pursuing. If you have previously completed a career interest inventory, bring the results with you (if possible).*
- How long do you plan to be in school?
- Will you be going full-time or part-time?
- What commitments do you have outside of school?
  - *Are you working full-time? Commuting a long distance? Taking care of parents or children? How might these commitments impact your academic work?*
- Do you want to earn a degree? A certificate?
- Do you think you will transfer to another institution? If so, where do you plan to transfer?
- What were your previous experiences in school? In math classes?

Questions you might want to ask your advisor

- "How is a degree different than a certificate?"
- "What are the requirements of the degree (and major) or certificate that I am considering? Are there prerequisites before I can declare this major?" (If you have not decided on a degree [and major] or certificate, ask if there are common requirements across different programs that you may be interested in.)
- "Which courses do you recommend for me? Why are you making these recommendations?"
- "What programs or extracurricular activities would fit well with my goals? Are there internships or jobs that I should have while here?"
- "What resources on campus can I use if I need help with writing? With study skills? With math? If I have a physical or learning disability?"

Information you should have before leaving your appointment

- What you need to do to finish registering and paying for classes
- When and where your classes will be held (If you do not have a schedule, find out what you need to know to enroll in classes.)
- When you will next meet with an academic advisor to "check in" on how everything is going
- Specific resources for questions you have about financial aid, career counseling, or disability accommodations

MODEL OF ADVISOR RESOURCE

Advisor–Student Conversation Guide

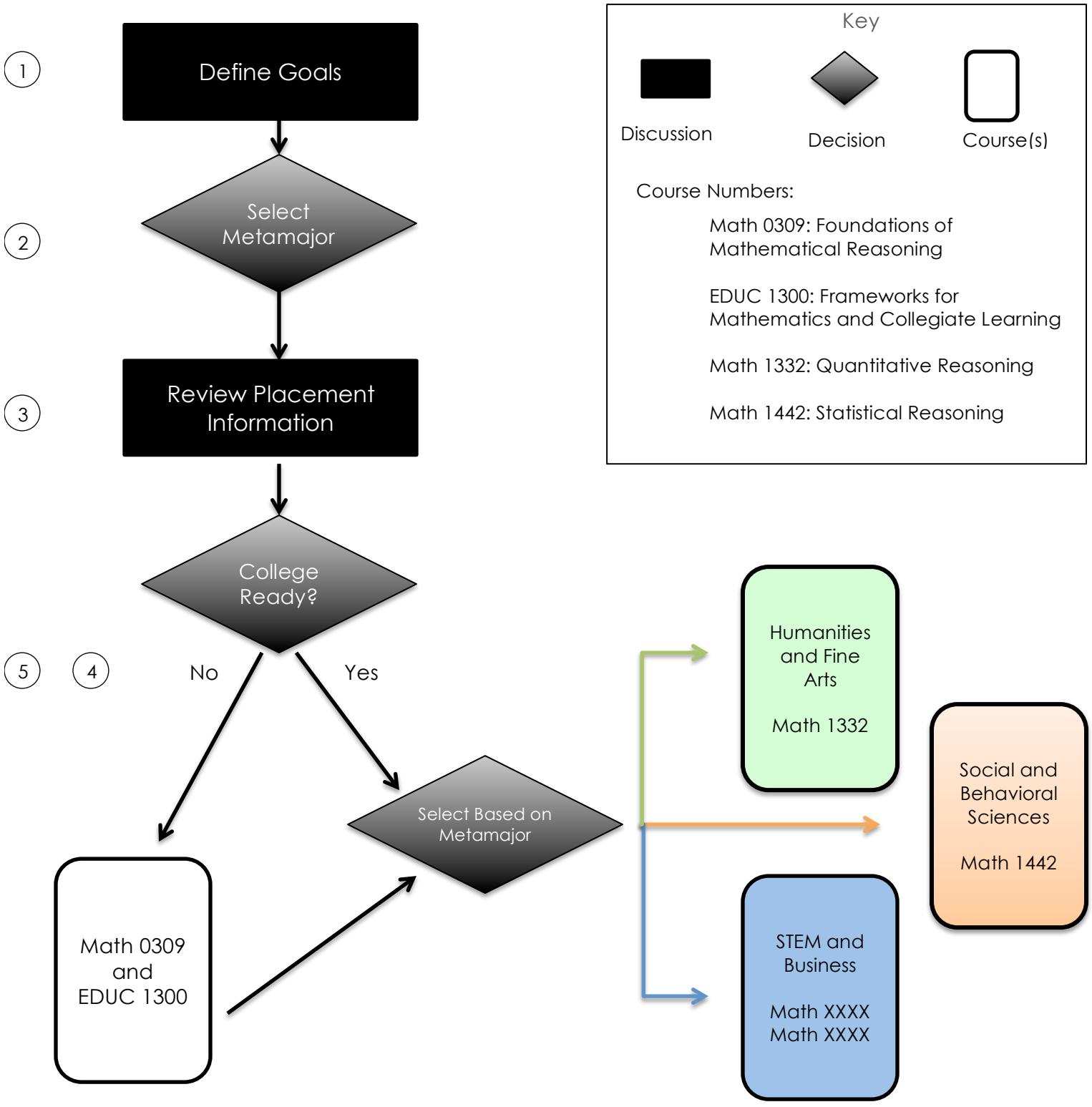
The numbered items below refer to steps shown in the *Advisor Decision Tree for Math Pathways*.

1. Define goals.
   - "What are you interested in doing?" For students who are undecided, discuss the types of programs within each metamajor to get a sense of general interests.
   - "What are your goals for earning a certificate or degree? How long do you plan to be in school? Will you be going full-time or part-time?"
   - "Where do you plan to transfer?" (if applicable)
2. Select a metamajor.
   - Explain that the programs within each metamajor have common requirements so students can begin taking those courses even if they have not decided on a specific major.
3. Review placement information and determine college readiness.
   - Explain to students how placement information is used to determine if they are ready for a college-level course.
   - [Add your college's actual placement information here.]
4. For college-ready students: Select and enroll in a mathematics course (if not college ready, go to #5).
   - Explain the mathematics course that the student will take and enroll the student. In particular, a student may be unfamiliar with Quantitative Reasoning or Statistics and may need information about what is involved in these courses and how they will help that student in his or her metamajor. If the student will need to take additional math courses in the future, explain how these courses will transfer to another institution. See the *Metamajor* sheets for student-friendly course descriptions.
5. For students who are not college-ready: Enroll in Math 0309 and EDUC 1300.
   - Give the student the math requirement handout for his or her metamajor. Explain each course. See the *Metamajor* sheets for student-friendly course descriptions.
   - Emphasize that the courses make up a pathway, and it is important to plan to take the college-level course immediately after Math 0309. Explain that students are most successful when they take math courses back-to-back without a delay.
   - The student is exempt from EDUC 1300 if he or she successfully completed it previously.

- Special programs:
  - Puente: Students who are taking or have taken the Puente student success course are exempt from the EDUC 1300 requirement.
  - Accelerated 8-week courses: Math 0309 and Math 1332 are offered in an accelerated format in which students take each course for 8 weeks and complete both courses in one semester. Students should expect to do 3 to 4 hours of out-of-class work each day. These accelerated courses are only available in fall on the North campus and are recommended for mature, highly motivated students with clear goals. These 8-week courses are not recommended for students working more than 15 hours per week outside of school due to the heavy workload.

MODEL OF ADVISOR RESOURCE

Advisor Decision Tree for Math Pathways



MODEL OF ADVISOR AND STUDENT RESOURCE

Sample Metamajors List*

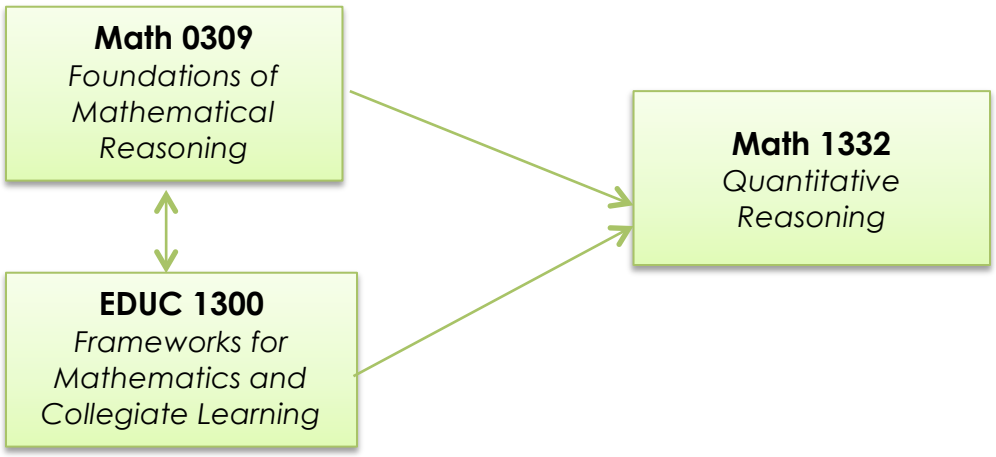
Humanities and Fine Arts	Social and Behavioral Sciences	STEM/Business
Anthropology	Archaeology	Architecture
Applied Arts and Sciences	Accounting Specialist or Tech	Astronomy
Applied Behavior Analysis	Criminal Justice	Biochemistry
Applied Technology and Performance Improvement	Dental Hygiene	Biology
Art History	Ecology for Environmental Science	Business/Marketing
Automotive Technology	Environmental Studies	Chemistry
Broadcast Media	Geography	Computer Science
Classics	GIS	Economics
Communications	Government	Elementary Education
Computer Programming	Human Resource Development	Engineering degrees
Culinary Arts	Industrial Technology	Environmental Science
Dance	Kinesiology	Mathematics
Design: Fashion, Interior	Management	Physics
Development and Family Studies	Medical Laboratory Sciences	
Digital Retailing	Merchandising	
Emergency Admin and Planning	Nursing	
English	Pharmacy Technician	
French	Political Science	
German	Psychology	
Health Studies	Sociology	
Health Information Technology	Social Work	
Heating, AC, and Refrigeration Tech	Speech-Language Pathology and Audiology	
History		
Hospitality Management		
Information Science		
International Studies		
Journalism		
Linguistics		
Music		
Paralegal		
Philosophy		
Professional and Technical		
Psychology (at some colleges)		
Radio, TV, Film		
Recreation and Leisure Studies		
Spanish		
Speech Communication		
Studio and Visual Arts		
Surgical Technician		
Theater		

* Your institution may organize majors into pathways other than what are listed above.

MODEL OF STUDENT RESOURCE

Math for the Humanities and Fine Arts Metamajor

Pathway:
Semester 1: Enroll in both Math 0309 (*Foundations*) and EDUC 1300 (*Frameworks*)
Semester 2: Enroll in Math 1332 (*Quantitative Reasoning*)



What to expect in these courses:

Math 0309: Foundations of Mathematical Reasoning
Give math another chance! In this class, you will learn about the math involved in things like credit card debt or how much material you need for your patio. This course covers math concepts that you will use in your everyday life and that are relevant to your career. We will use websites, advertisements, and tax documents so that these math concepts are meaningful to you. You will have a ton of resources to draw upon and when you finish this course, you will be well prepared for your college-level mathematics course.

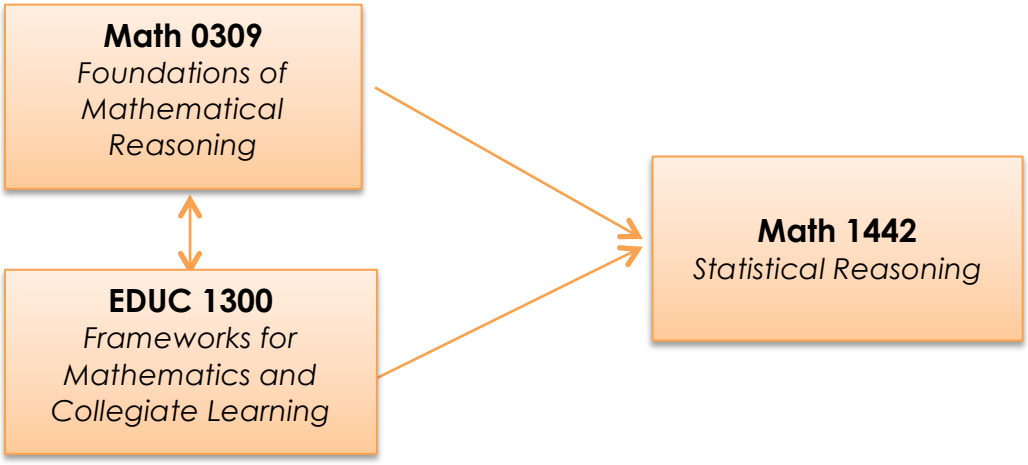
EDUC 1300: Frameworks for Mathematics and Collegiate Learning
Have you ever studied for hours and hours, yet could not remember what you studied when it's time to take the test? Or have you wondered how you can motivate yourself to do your schoolwork? In this course, we will investigate why this happens by studying the factors that impact learning. We will develop strategies that can help you be successful in both your academic and personal life. We will also explore campus resources available to support you on your academic journey and complete projects focused on career planning and conducting research.

Math 1332: Quantitative Reasoning
What are the hidden mathematics in your life? How can math help you be more informed about your finances, your health, and the world around you? In this class, we will use data that you are likely to encounter in your everyday life (e.g., your personal budget, career salaries) and math that you are likely to encounter in your professional life (e.g., how to test the safety of new medical treatments, how we measure the growth of human population). Expect to actively participate in class activities and to have access to the same kinds of supports you had in *Foundations*!

MODEL OF STUDENT RESOURCE

Math for the Social and Behavior Sciences Metamajor

Pathway:
Semester 1: Enroll in both Math 0309 (*Foundations*) and EDUC 1300 (*Frameworks*)
Semester 2: Enroll in Math 1442 (*Statistical Reasoning*)



What to expect in these courses:

Math 0309: Foundations of Mathematical Reasoning
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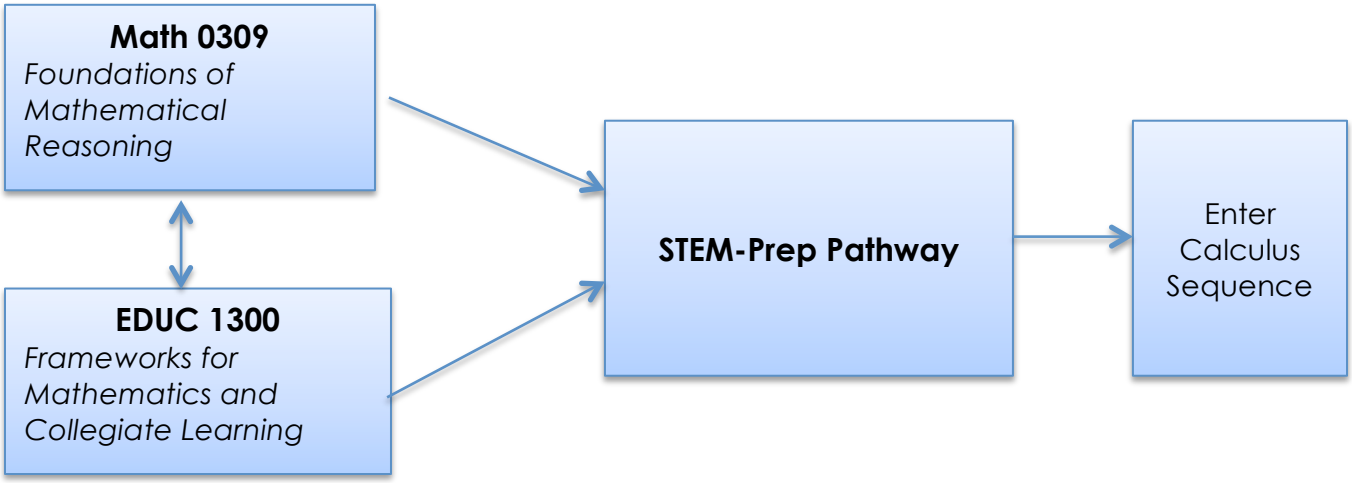
Math 1442: Statistical Reasoning Course

Have you wondered how we measure the effectiveness of flu vaccines or why experiments have placebo groups? Have you scratched your head trying to figure out the likelihood that a coin would land heads up five times in a row? Statistics can help you answer these questions. Understanding what statistics can (and can't) tell you will help you make more informed decisions at work and in your personal life. In this class, you will build mathematical skills that will be useful in your field of study. Expect to actively participate in class activities and to have access to the same kinds of supports you had in *Foundations*!

MODEL OF STUDENT RESOURCE

Math for the STEM (Science, Technology, Engineering, Math)/ Business Metamajor

Pathway:
Semester 1: Enroll in both Math 0309 (*Foundations*) and EDUC 1300 (*Frameworks*)
Semester 2 & beyond: TBA



What to expect in these courses:

Math 0309: Foundations of Mathematical Reasoning
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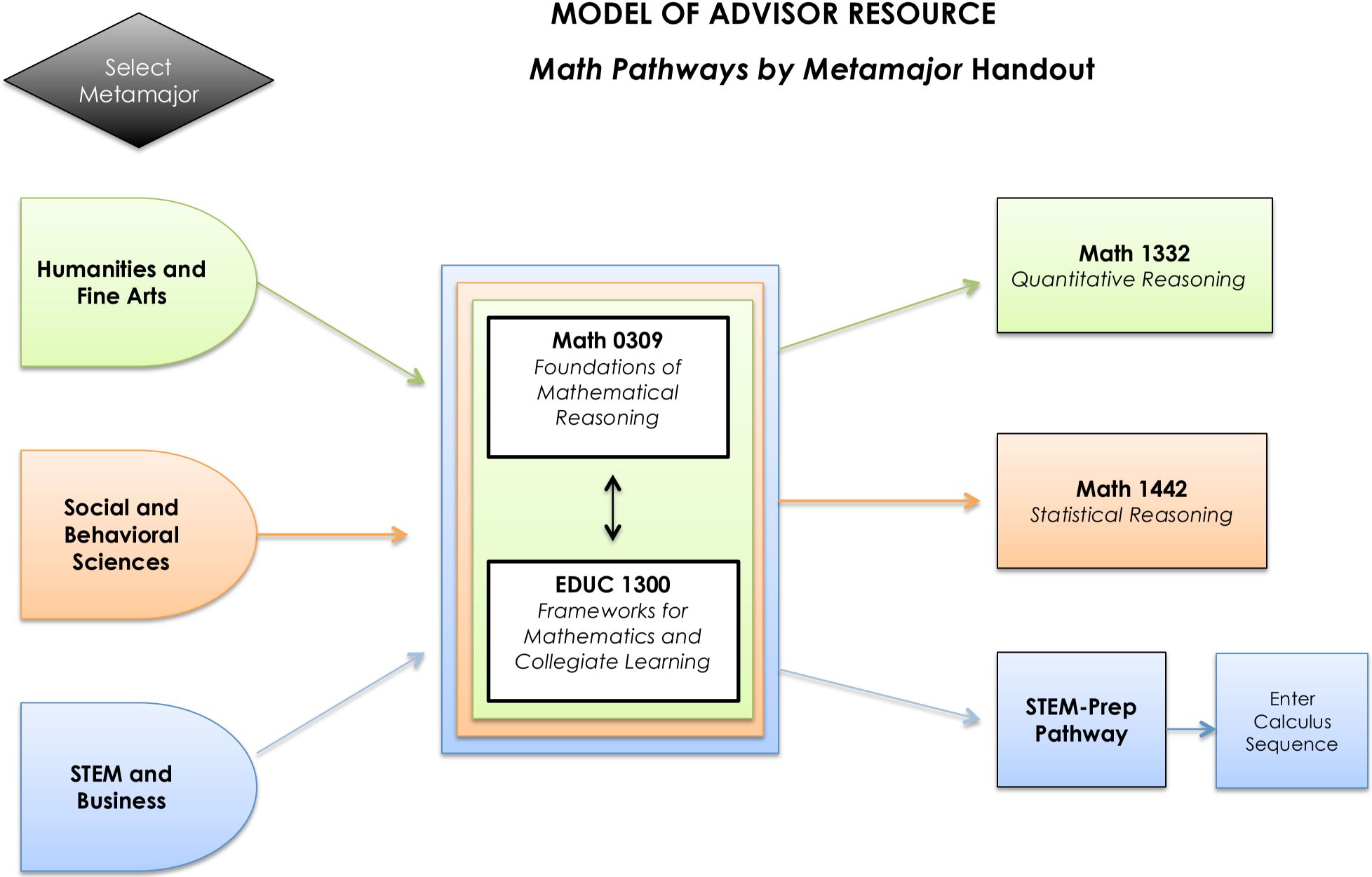
[Add STEM Prep Pathway and Calculus Sequence Course descriptions here]

MODEL OF ADVISOR RESOURCE

Math Pathways by Metamajor Handout



Math Pathways Course Descriptions by Metamajor

Courses Common Across All Pathways

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Humanities and Fine Arts

Math 1332: Quantitative Reasoning
What are the hidden mathematics in your life? How can math help you be more informed about your finances, your health, and the world around you? In this class, we will use data that you are likely to encounter in your everyday life (e.g., your personal budget, career salaries) and math that you are likely to encounter in your professional life (e.g., how to test the safety of new medical treatments, how we measure the growth of human population). Expect to actively participate in class activities and to have access to the same kinds of supports you had in *Foundations*!

Social and Behavioral Sciences

Math 1442: Statistical Reasoning Course
Have you wondered how we measure the effectiveness of flu vaccines or why experiments have placebo groups? Have you scratched your head trying to figure out the likelihood that a coin would land heads up five times in a row? Statistics can help us answer these questions. Understanding what statistics can (and can't) tell you will help you make more informed decisions at work and in your personal life. In this class, you will build mathematical skills that will be useful as you work within your field of study. Expect to actively participate in class activities and to have access to the same kinds of supports you had in *Foundations*!

STEM and Business

[Insert course description here]