*This document is intended to support mathematics majors in developing a plan for success. It should be completed by each mathematics major, in collaboration with a faculty mentor.*

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**Guidelines**

**Introduction**

An individual development plan (IDP) is a personal action plan designed to help you take ownership of your academic and professional development, set and achieve realistic goals, and clarify your responsibilities and expectations. You can tailor your IDP to your individual needs, with input and advice from your mentor. It can also be a useful launching point for discussing your long-term career interests with your mentor. The first step is to assess your academic/professional strengths and weaknesses and identify those most relevant to achieving your goals. This IDP divides academic/professional skills into seven core competencies: **Organization and Planning, Research and Learning, Teaching & Mentoring, Leadership & Teamwork, Oral & Written Communication, Diversity, Equity, Inclusivity, and Cultural Competence (DEIC)[[1]](#endnote-1), and Career Development.** The second step is to make a plan of action to help you achieve your goals and strengthen your core competencies. This action plan will be revisited and updated regularly.

**How to prepare your IDP**

(*Suggested timeline in parentheses*)

***Step 1***

*(within 1 week)* Complete the self-assessment and share it with your mentor.

***Step 2***

*(within 1 month)* Draft your action plan and get feedback from your mentor.

***Step 3***

*(within 1 month)* Revise your action plan based on your mentor’s feedback.

***Step 4***

Each semester, meet with mentor to review progress, outline future activities, and revise your action plan. Once a year, revise your self- assessment.

**Tips & Best Practices**

* Be honest when identifying strengths and weaknesses.
* Ask advisors, instructors, mentor, and classmates for feedback.
* Identify the skills and competencies that are most relevant to achieving your goals.
* Utilize resources available through professional organizations, online courses, and webinars.
* Make your milestones **S**pecific, **M**easurable, **A**ctionable, **R**ealistic, and **T**imely (SMART)! Vague goals such as “get better at programming” or “practice public speaking” are hard to act on. Specific milestones such as, “develop Python code to plot/analyze by Oct 31” or “give a department seminar in the spring,” work much better.
* Be mindful of the ways in which milestones can help to strengthen core competencies.
* Revise the self-assessment annually to gauge progress, and re-prioritize as needed.

**Self-Assessment Form**

This form will help you to assess your professional skills in terms of seven core competencies: Organization and Planning, Research and Learning, Teaching & Mentoring, Leadership & Teamwork, Oral & Written Communication, Diversity, Equity, Inclusivity, and, Cultural Competence (DEIC), and Career Development.

**Directions:** This form includes lists of important skills associated with each core competency. Determine your competency level for each skill. Rate your competence on a scale from 1 to 3, where 1 is “inadequate,” 2 is “proficient,” and 3 is “adept,” or, if a skill is not relevant to your academic and professional goals select “N/A.” After rating your competency level for each skill, complete the short writing exercise at the end of this form.

**Core Competency 1: Planning and Organization**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** |
| *Setting short-term goals* |  |  |  |
| *Time management* |  |  |  |
| *Maintaining organized class notes* |  |  |  |
| *Meeting deadlines* |  |  |  |
| *Attending class meetings* |  |  |  |
| *Timely communication* |  |  |  |

**Core Competency 2: Research and Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** |
| *Reading mathematical texts for understanding* |  |  |  |
| *Getting the most from lecture* |  |  |  |
| *Discussing mathematics* |  |  |  |
| *Proof writing* |  |  |  |
| *Computer programing* |  |  |  |
| *Awareness/utilization of learning resources* |  |  |  |
| *Awareness/utilization of research opportunities for undergraduates* |  |  |  |
| *Problem solving/troubleshooting* |  |  |  |
| *Coping with challenges and adversity* |  |  |  |
| *Incorporating feedback* |  |  |  |

**Core Competency 3: Teaching & Mentoring**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** |
| *Familiarity with best practices in teaching* |  |  |  |
| *Awareness/utilization of opportunities to teach or mentor as an undergraduate* |  |  |  |
| *Awareness/utilization of resources for teaching/mentoring* |  |  |  |
| *Careful listening* |  |  |  |
| *Respecting diversity* |  |  |  |
| *Serving as a role model* |  |  |  |

**Core Competency 4: Leadership & Teamwork**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** |
| *Ability to work with a team* |  |  |  |
| *Ability to lead and motivate others* |  |  |  |
| *Valuing the contributions and ideas of others* |  |  |  |
| *Dealing with and resolving conflict* |  |  |  |
| *Negotiating with a peer* |  |  |  |
| *Negotiating with a more senior person (e.g., advisor)* |  |  |  |
| *Task delegation* |  |  |  |
| *Awareness of leadership/teamwork opportunities for undergraduates* |  |  |  |

**Core Competency 5: Oral & Written Communication**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** |
| *Communicating effectively in everyday conversation* |  |  |  |
| *Being an active listener* |  |  |  |
| *Communicating effectively through writing* |  |  |  |
| *Social media communication & etiquette* |  |  |  |
| *Public speaking* |  |  |  |
| *Using correct grammar* |  |  |  |
| *Using technical vocabulary* |  |  |  |
| *Awareness of resources/opportunities to improve communication* |  |  |  |

**Core Competency 6: Diversity, Equity, Inclusivity, and Cultural Competence (DEIC)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** |
| *Awareness of one’s own worldview/identity* |  |  |  |
| *Knowledge of & respect toward other worldviews/identities* |  |  |  |
| *Cultivating awareness of one’s own implicit biases* |  |  |  |
| *Effectively contributing to a welcoming and inclusive work climate* |  |  |  |
| *Awareness of concerns related to DEIC in your discipline/community* |  |  |  |
| *Awareness of Title IX protections, responsibilities, and obligations* |  |  |  |
| *Awareness of campus resources for supporting DEIC* |  |  |  |

**Core Competency 7: Career Development**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **1** | **2** | **3** |
| *Establishing career goals* |  |  |  |
| *Awareness of career opportunities in your field* |  |  |  |
| *Networking inside and outside your academic environment* |  |  |  |
| *CV/resume writing* |  |  |  |
| *Making time for career development* |  |  |  |
| *Interviewing for a job* |  |  |  |
| *Awareness of resources for career development* |  |  |  |

Reflection: What patterns do you notice across your self-assessment? Which competencies are most relevant for your career goals? What are your areas of strength? What areas need development?

**Action Plan**

Identify **S**pecific, **M**easurable, **A**ctionable, **R**ealistic, and **T**imely (SMART) milestones that can be accomplished in the next 6-12 months to help achieve your long-term goals (column 1). For each milestone, define your approach or strategy (column 2), the core competencies you will develop (column 3), a realistic timeframe (column 4), and resulting output (column 5). The output should be easily measured, so you know whether you have met your goal. Add rows as needed; you can skip any sections not currently relevant to you.

1. **Career Plans and Potential Career Paths**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestones** | **Approaches/Strategies** | **Related Competencies** | **Deadline** | **Outputs** |
| *Example*: Determine three possible careers in mathematics that are appealing to me. | Interview three career professionals (for 15-20 minutes each) to learn about their profession and how they apply mathematics in their work. | Oral and Written Communication | January 2023 (interview 1)  March 2023 (interview 2)  May 2023 (interview 3) | Write a brief summary of each interview to share what I learned with my faculty mentor. |
|  |  |  |  |  |
|  |  |  |  |  |

1. **Course Selection to Support the Student’s Career Plans**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestones** | **Approaches/Strategies** | **Related Competencies** | **Deadline** | **Outputs** |
| *Example*: Research the best advanced mathematics electives to fit my career plans. | Talk with current advanced undergraduate students and/or graduate students for advice on course selection. | Organization and Planning | May 2023 | A list of 3-4 possible advanced mathematics classes of interest—to discuss with faculty mentor. |
|  |  |  |  |  |
|  |  |  |  |  |

1. **Professional Development Opportunities (e.g., tutoring, internships, research experiences, clubs, seminars, conferences)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestones** | **Approaches/Strategies** | **Related Competencies** | **Deadline** | **Outputs** |
| *Example*: Attend a research conference for undergraduate mathematics majors. | Search online and ask my professors for ideas of possible research conferences that would be suitable for an undergraduate mathematics major. | Research and Learning, Oral and Written Communication | Summer 2023 | Attended a research conference for undergraduate mathematics majors and shared what I learned/experiences with my faculty mentor. |
|  |  |  |  |  |
|  |  |  |  |  |

1. **Miscellaneous: Additional Points of Contact for the Student, Progress, Student Concerns**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestones** | **Approaches/Strategies** | **Related Competencies** | **Deadline** | **Outputs** |
| *Example*: Improve potential for success in upcoming Foundations of Higher Mathematics course. | Read a book on introductory proof strategies. | Research and Learning, Oral and Written Communication | April 2023 | Read book and share what I learned with my faculty mentor. |
|  |  |  |  |  |
|  |  |  |  |  |

**Resources**

***Self-assessment and planning your IDP***

* Phillips-Jones, L. (2003). The mentee's guide: How to have a successful relationship with a mentor. Coalition of Counseling Centers.

***Teaching and Mentoring***

* Science Education Resource Center: <http://serc.carleton.edu/index.html>
* Carl Wieman Science Education Initiative: <http://www.cwsei.ubc.ca/>
* Mentorship in STEMM. Washington DC: The National Academies Press. <http://nap.edu/25568>

***Leadership & Teamwork***

* Linsky, M, Heifetz, R.E. (2002) Leadership on the Line: Staying Alive Through the Dangers of Leading. Harvard Business Review Press
* Sapienza, A.M. (2004) Managing Scientists: Leadership Strategies in Scientific Research. Wiley-IEEE, Inc.
* Myers, B. (2011) Take the Lead. Atria Paperback. Simon & Shuster, Inc.

***Oral & Written Communication***

* Browning, B. (2008) Perfect Phrases for Writing Grant Proposals. Madison, Wisconsin: CWL Publishing Enterprises
* Olson, R. (2009) Don’t Be Such A Scientist. Island Press
* Day, R. A., & Gastel, B. (2011). How to write and publish a scientific paper. Santa Barbara. Cal. USA: Greenwood.

***DEIC***

* Implicit bias tools: https://blogs.umass.edu/diversitynsb/dei-in-science/
* ADVANCEGeo resource collection: <https://serc.carleton.edu/advancegeo/resources/index.html>
* UCAR Diversity & Inclusion resources: <https://www.ucar.edu/who-we-are/diversity-inclusion>
* Resources to prevent harassment, bullying and other exclusionary behaviors in research environments: <https://serc.carleton.edu/advancegeo/resources/index.html>
* National Association of Colleges and Employers : <https://www.naceweb.org/>
* Association for Women in Mathematics : <https://awm-math.org/programs/mentor-network/programs-mentor-network-mentee-guide/>

***Career Development***

* Bolles, R.N. (2002) What Color is your Parachute? A Practical Manual for Job-Hunters and Career-Changers. Ten Speed Press
* Robbins-Roth, C. (2006) Alternative Careers in Science – Leaving the Ivory Tower. Elsevier
* Careers in Science and Engineering (1996) A Student Planning Guide to Grad School and Beyond. National Academies Press
* Career Resources for ​College Students with Disabilities: <https://www.nccsdclearinghouse.org/career-page-for-students.html>
* Career Resources for Undergraduates: <https://www.newschool.edu/career-services/undergrad-resources/>
* Fiske, P. S. (2013). Put your science to work: the take-charge career guide for scientists. John Wiley & Sons.
* Alternative Careers for Scientists: <https://bitesizebio.com/301/alternative-careers-for-scientists/>
* Association for Women in Mathematics : <https://awm-math.org/programs/mentor-network/programs-mentor-network-mentee-guide/>
* We use Math: http://weusemath.org/

***Professional Organizations (Resources for all competencies)***

* Society for Mathematical Biology: <https://www.smb.org/>
* American Mathematical Society: <https://www.ams.org/home/page>
* Society for Industrial and Applied Mathematics: <https://www.siam.org/>
* Mathematical Association of America: <https://www.maa.org/>
* National Council of Teachers of Mathematics: ([www.nctm.org](http://www.nctm.org/) )
* UTeach: ( <https://institute.uteach.utexas.edu/> )

1. Diversity: the practice or quality of including or involving people from a range of different social and ethnic backgrounds and of different genders, sexual orientations, etc (Oxford Languages, , 2023).

   Equity: the quality of being fair and impartial (Oxford Languages, 2023).

   Inclusivity: the practice or policy of providing equal access to opportunities and resources for people who might otherwise be excluded or marginalized, such as those having physical or intellectual disabilities or belonging to other minority groups (Oxford Languages, 2023).

   Cultural Competence: Cultural competency means being aware of your own cultural beliefs and values and how these may be different from other cultures—including being able to learn about and honor the different cultures of those you work with (Children’s Bureau, 2023).

   Bibliography

   Children’s Bureau, (2023, April 28). *Cultural Competency*. Retrieved from Child Welfare Information Gateway: https://www.childwelfare.gov/pubs/acloserlook/culturalcompetency/culturalcompetency2/#:~:text=%22Cultural%20competency%20means%20being%20aware,of%20those%20you%20work%20with.%22

   Oxford Languages. (2023, April 28). *Equity*. Retrieved from Google: https://www.google.com/search?q=define+equity&rlz=1C1GCEA\_enUS986US986&biw=1225&bih=704&ei=k-BLZJqvEe-0qtsPyt2o4Ag&ved=0ahUKEwjaxP3b7Mz-AhVvmmoFHcouCowQ4dUDCBA&uact=5&oq=define+equity&gs\_lcp=Cgxnd3Mtd2l6LXNlcnAQAzIQCAAQigUQsQMQkQIQRhD5ATIICAAQigUQkQIyCAgA

   Oxford Languages. (2023, April 28). *Inclusivity*. Retrieved from Google: https://www.google.com/search?q=define+inclusivity&rlz=1C1GCEA\_enUS986US986&biw=1225&bih=704&ei=\_-BLZL78DPyxqtsPj8-L8Ao&ved=0ahUKEwj-97iP7cz-AhX8mGoFHY\_nAq4Q4dUDCBA&uact=5&oq=define+inclusivity&gs\_lcp=Cgxnd3Mtd2l6LXNlcnAQAzIKCAAQgAQQRhD5ATIFCAAQgAQyBQgAEI

   Oxford Languages. (2023, April 28). *Diversity*. Retrieved from Google: https://www.google.com/search?q=diversity&rlz=1C1GCEA\_enUS986US986&oq=diversity&aqs=chrome.0.69i59l2j0i433i512l4j69i60l2.1709j0j4&sourceid=chrome&ie=UTF-8&bshm=lcbse/1

   **Sample Alumni Employers and Current Positions**

   |  |  |
   | --- | --- |
   | **Employer** | **Current Position** |
   | Wilson county schools | Teacher |
   | Bedford County Dept of Education | Math Teacher at Community High School |
   | Nevada Sixth Judicial District | Law Clerk |
   | Trexis Insurance | Product Analyst |
   | SIGMA Actuarial Consulting Group, Inc. | Actuarial Analyst |
   | UBS | Credit Risk Officer |
   | Huron Consulting Group | Consultant |
   | State of TN Dept of Human Resources | Manager of Data Management |
   | Metro Nashville Public Schools & Nashville State Comm. College | Teacher |
   | Mathnasium / University of Sioux Falls | Adjunct Math Professor |
   | Gonzaga University | Assistant Professor of Mathematics, Tenure-Track |
   | NBT Bancorp | Actuarial Analyst I |
   | Equifax | Senior Data Scientist |
   | South College | Associate Professor of Mathematics |
   | Rutherford County Schools | High School Math Teacher |
   | Rutherford County Schools | High School Math Teacher |
   | Jackson National | Internal Wholesaler |
   | Henry Horton State Park | Golf Pro Shop |
   | Centene Health Care | Project Manager |
   | Bedford County Board of Education | Mathematics Teacher |
   | Columbia Central High School | Algebra 1 Inclusion |

   [↑](#endnote-ref-1)