

INDIVIDUAL DEVELOPMENT PLAN

FOR NEW GRADUATE ENGINEERING STUDENTS AT PURDUE UNIVERSITY

Purpose

Completing a comprehensive Individual Development Plan (IDP) will optimize the success of the graduate school experience. An IDP sets a clear and concise record to establish open lines of communication and expectations with your advisor to keep your graduate career on track.

Recommendations

Fill out this form on your own within your first semester of graduate school. Once completed, bring to a one-on-one meeting with your advisor and discuss. They should be able to provide comments and recommend resources for achieving your goals.

Fill out this IDP with intrinsic motivation, imagining your ideal career and what you need to obtain that position. The more specific the plan, the more likely you are to carry it out. A nationwide study on postdoctoral researchers who completed IDPs at the start of their appointments found the postdocs had greater satisfaction, published more papers, and experienced fewer conflicts with their advisors than those who did not complete an IDP¹. These trends apply to graduate students, too. Writing your plan down will increase your likelihood of success in graduate school.

Your IDP should be revisited at the beginning of each semester (summer included) for assessment of progress toward goals. Ask yourself these questions while developing your IDP to utilize your time in graduate school to reach your professional career goals:

- What do you want to do daily after you graduate?
- When you consider your future, what is important to you?
- What sort of impact do you want your job to have?
- What skills are necessary to be successful in your ideal career?
- Do you need to participate in activities to develop interpersonal relationships?
- What type of mentoring do you need?
- How will you develop contacts or network in relation to your career goal?

Steps

1. Complete the myIDP career planning exercise (<http://myidp.sciencecareers.org/>).
2. Fill out the self-assessment to determine your current standing in relevant skillsets
3. Fill out the IDP on your own, keeping in mind both your short- and long-term goals
4. Meet with your research advisor to:
 - a. Set your mutual expectations of one another
 - b. Discuss and revise your IDP as fit
5. Revisit your IDP at least once per year, if not more often, to assess your progress, update skillset, and set new goals as needed

General Timeline

While no two graduate degrees look exactly the same, this timeline provides you with a general idea of annual checkpoints to keep yourself on track. It is ok to be a little ahead or behind schedule as long as you and your advisor agree that you will finish your degree in a reasonable amount of time.

Year 1

Learning and Research

- If not assigned prior to your first semester, identify your primary research advisor, begin to identify members of your committee, and determine when to meet and how often
- Learn about the departmental requirements for obtaining your degree (i.e., required coursework and the timeline for your preliminary, qualifying, and defense exams)
- Complete required safety training or orientation procedures for your lab
- Learn to design research studies that will properly address various research questions
- Choose a reference paper management or citation software to track the literature you are reviewing
- Define and stick to a method of filing your data in an organized manner (Note: you should check first with your advisor or lab group for any methods that are preferred)
- Enroll in appropriate courses that will help you improve knowledge in your research area
- If you are applying for fellowships or grants, create a timeline of your application steps
- By the end of year 1, define your research directions

Communication

- Learn to organize, interpret, and present your data
- Work on effectively communicating results in written, oral, and graphical form
- Develop technical writing skills through feedback from your advisor
- Learn who the key contacts are in your lab, department, and college. Begin forming respectful relationships with them

Career Development

- Learn about the career opportunities for someone with your degree
- Seek opportunities to mentor younger students or undergraduate researchers
- Identify your natural and learned skillset and match these to career options
- Discuss career opportunities and goals with your mentor, peers, and family members
- Prepare to thrive in an increasingly diverse global environment

Years 2-3

Learning and Research

- Reassess your thesis committee members and set up a plan for how often you will meet
- Set dates for relevant department requirements: preliminary exam, qualifying exam, etc.
- Stay up to date and maintain a knowledge of the current literature and discoveries within your research area
- Set short- and long-term research goals with a timeline to stay on track to graduation
- Keeping your department's requirements in mind, continue taking relevant courses, and work toward developing a skill set that will set you up for success in your future career
- Continue to develop as a researcher in criticizing literature and understanding argumentation of research in your field

Communication

- Have established methods of organizing, interpreting, and presenting your data
- Attend at least one conference to present your work (poster or verbal) and network
- Aim to be the first or second author on a journal paper
- Maintain relationships with relevant contacts within and outside of your lab, department, and college

Career Development

- Identify a few ideal career options and learn what is necessary to obtain those positions
- Seek opportunities to mentor younger students or undergraduate researchers
- Begin acquiring the skills and network for your ideal positions
- Prepare to thrive in an increasingly diverse global environment
- Develop a CV and keep it updated

Years 4+*Learning and Research*

- Practice balancing multiple responsibilities and managing your time with experimentation, data analysis, and reporting
- Continue to improve your ability to think creatively, troubleshoot, and design experiments to resolve problems and demonstrate expertise in your field of study
- Publish as many first-author conference and journal papers as is relevant while maintaining high quality
- Attend additional conferences as you and your advisor see fit
- Set a tentative timeline to graduation, including a general idea of your thesis defense

Communication

- Request feedback from your advisor and other mentors on your presentation and writing skills
- Seek opportunities to practice your facilitation and teaching skills (Note: facilitation skills will be relevant in careers in- and outside of academia, while teaching skills will be more relevant for careers in academia)
- Learn how to present your highly technical research to a general, non-technical audience
- Refine your interview skills and be aware of negotiation methods for your job field

Career Development

- Narrow down your ideal career to a few positions that are ideal for your skillset
- Continue growing your network and utilize these connections as you search for a job
- Seek opportunities to mentor younger students or undergraduate researchers
- Keep your CV updated and share with relevant connections when appropriate
- Update your professional online profile or personal website
- Prepare to thrive in an increasingly diverse global environment
- Begin the job search and submit applications when ready

Step 1: Self-Assessment of Skillset

This assessment is designed to help you identify your current levels of development in a number of skills and will be reflected in the goals you create in Step 2 of this IDP. The skills listed below will be important to your development as a graduate student and in your future career. Rate your current abilities with these skills from 1 to 5, where 1 indicates low proficiency/limited experience currently and 5 represents a level of mastery.

Skills that are 4-5 should be maintained and honed during your graduate experience, while skills that are 1-3 may need to be addressed and improved upon before graduation. Your advisor could be the one to help you develop many skills as a graduate student, but they may not be the expert in all categories. To develop any of these skills further, check out the seminars and workshops offered by [The Graduate School](#) that are specifically designed for your professional development. The College of Engineering will also have opportunities for you to engage and practice a multitude of skills.

Communication Skills: Written, Oral, Graphical, Interpersonal

	1	2	3	4	5
Technical report writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Publication and journal article writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grant proposal writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oral presentation of technical research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Presentation to a general/nontechnical audience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to teach in a classroom setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to prepare graphical presentation of data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negotiating conflict	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receiving feedback and constructive criticism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing feedback and constructive criticism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fluency in English	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work effectively with peers and colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work effectively with advisor and mentors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Leadership and Classroom Management

	1	2	3	4	5
Setting timelines and objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing constructive feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervising or mentoring researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Running a meeting efficiently to stay on track	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing a project or course budget	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conducting a classroom lecture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conducting a laboratory class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preparing and facilitating active learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating meaningful course assessments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preparing a syllabus, measurable course goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing a course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintaining engagement in distance learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Diversity and Inclusion Values

	1	2	3	4	5
Work with people from varying backgrounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work with people from varying cultures/ethnicities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Demonstrate equitable leadership skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promote a respectful workplace and classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recognize differences and similarities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultivate relationships with different cultures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engage in cultural activities to learn from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consider differences in learning styles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Research and Scientific Skills

	1	2	3	4	5
Knowledge within academic field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge within specific research area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical skills relevant to your research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interpretation of data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Statistical analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creativity and innovation, troubleshooting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop advanced skills within your field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing experiments to solve research questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to conduct research independently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conduct research in a sound, ethical manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Personal and Career Development

	1	2	3	4	5
Balancing work and life to maintain motivation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintain physical and mental health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manage personal finances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engage in community and civic duties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in service and outreach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making contacts and networking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attend conferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Apply for fellowships or grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone, video, and in-person interview skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prepare a concise resume, cover letter, and/or CV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understanding of basic job offer negotiation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Step 2: Individual Development Plan for Year 1

For your first year, focus on the skills you would like to improve and set achievable goals for the upcoming year. The more specific the goal, the more likely you are to complete it. See the example below for an idea of how to approach completing your first IDP. However, the skills on which you choose to focus should be tailored to your path and career goals. You should use the skills listed above in Step 1 to guide you in this practice, and this is also a space to think about other skills not mentioned in the above section.

Research and Scientific Skills

<i>Skill</i>	<i>Importance</i>	<i>Opportunities/Goals</i>
Statistical Analysis	Data should be analyzed to determine if it is statistically consistent and can be reported. Statistical analysis of data should be reported in journal publications.	Take STAT 511 next semester and earn an A so I am prepared to do statistical analyses when the time comes.
		Take STAT 512 within the next three semesters
Creativity and Innovation	Creative problem solving is vital in engineering. Improving creativity and innovative approach to research will be beneficial for improving knowledge in my field of study.	Read at least 2-5 journal articles per week to learn how other researchers have approached solving problems
		Talk with my advisor about working toward the Purdue Entrepreneurship and Innovation Certificate
Ethical Research	If research is not conducted ethically, it is worthless. Everything from safety protocols to consideration of affected individuals must be evaluated.	Email advisor or lab manager about safety training
		Attend the Engineering Ethics Seminar being offered next month. Take notes and revisit them twice per year.
Technical Skills	In order to collect data, I need to understand how to operate relevant software and instruments. I also need to improve my ability to conduct literature reviews efficiently.	Ask my advisor/lab group what instruments, procedures, or software I need to learn in order to be successful. Schedule relevant trainings.
		When reading literature, take note of the Methods section to learn about relevant resources in my field.

Research and Scientific Skills

<i>Skill</i>	<i>Importance</i>	<i>Opportunities/Goals</i>
		<hr/> <hr/> <hr/>
		<hr/> <hr/> <hr/>
		<hr/> <hr/> <hr/>
		<hr/> <hr/> <hr/>

Step 3: Advisor/Student Meeting

What makes a good research mentor?

A mentor is a guide for your academic discipline, an expert in your area of research, a networking resource, and an example/role model for research, teaching, and professional development. While your research advisor should be your primary mentor, it is important to have other mentors to assist in your growth, development, and support. Research mentors should know their advisees and tailor their mentoring style to each student, recognizing the differences in their needs. Mentors should know their students’ short-term and career goals and provide resources and advice as to how to achieve these objectives. Advisors are not responsible for the mental health of their students but are encouraged to be as sensitive and understanding as possible when it comes to this issue, directing students toward appropriate campus resources and offering adjustments to workload when necessary and feasible.

What makes a good research mentee?

Mentees should be respectful of the advisor’s time while also advocating for oneself and ensuring they have the resources necessary to be successful. Ask questions and ask for help when needed to avoid unnecessary mistakes or delays in progress. Work hard to achieve objectives and goals but take time to relax when needed. Work-life balance is vital to avoiding burnout and making progress on graduate research; mentees should keep in mind that different career path goals (e.g., academia vs. industry) may have different implications on work/life balance flexibility during their graduate studies. Keep in close communication with your advisor to keep them updated on progress, results, and plans. An advisor cannot help you if they do not know there is an issue. Be open, honest, and ask questions to work together toward your goals.

Setting Guidelines

Academic

What courses are department requirements? What elective courses are relevant to your research?

What is the expectation for balancing coursework and research responsibilities? Note: this may change over time. Revisit as needed.

Research

How often will you meet one-on-one? As a lab group? With your funders (if applicable)? Other?

How should the student report progress or data to the advisor? Written reports, raw data, calculations and plots, PowerPoint summary, verbal conversation, etc.

Is there any safety or other training required prior to conducting research? If so, how often?

Who should the student consult first if there is a research question? Is there a more senior graduate student in the group, postdoc, or lab manager? Or should they go straight to the mentor?

Professional Development

What are mentor expectations for publishing and conference presentations?

Step 4: Individual Development Plan for Years 2+

Use this section after your first year to update your IDP based on annual progress.

Research and Scientific Skills

Progress over the past year:

Goals for the upcoming year:

Communication Skills

Progress over the past year:

Goals for the upcoming year:

Leadership and Classroom Management

Progress over the past year:

Goals for the upcoming year:

Diversity and Inclusion Values

Progress over the past year:

Goals for the upcoming year:

Personal and Career Development

Progress over the past year:

Goals for the upcoming year:

This document is to be used as an agreement for how a graduate student plans to develop throughout their time in their program. The agreement is not legally binding and should be revisited and updated over the course of a student's academic career. Advisors and students should use this document to hold one another accountable to the student's development and growth. Use the space below to add any other statements that the student and advisor would like to sign off on.

Notes from Advisor/Student Meeting:

Student Signature

Date

Advisor Signature

Date