Individual Development Plans (IDP): Radar Plot

(Modified from Dr. Heather E. Cannavan, Univ. of NM, 2014)

The following was developed based on a typical Ph.D. students' development by graduation. This is meant as an example and guidance. **You are encouraged to modify it to fit your needs and goals.**

Complete the Radar Plot based on the broader skillsets you aim to develop. Establish a clear set of criteria to assess progress. Create a new plot within pre-established increments (e.g., annually, each semester) to effectively evaluation progress towards your goals / skillset development.

FIRST, develop your areas for skill development and the associated criteria for evaluation.

Suggested Pie Wedges and associated criteria for evaluation

1. Oral presentation skills
    a. Novice
        i. Contribute to presentations
        ii. Poster presentation
    b. Intermediate
        i. Quals
        ii. Short Talks
    c. Advanced
        i. Comps
        ii. Long – at minimum, 30 minutes talk
    d. Expert
        i. Present long talk on a different topic than research such as a classroom lecture or science on tap

2. Written skills
    a. Novice
        i. Write a novice NSF GRFP
        ii. Write abstract
    b. Intermediate
        i. Make a poster
        ii. Write a paper/patent
    c. Advanced
        i. Write paper/patents x 3
        ii. Write thesis/dissertation
    d. Expert
        i. Apply for NIH training grant(s)

3. Safety
    a. Novice
        i. MSDS
        ii. Online training modules (basics)
    b. Intermediate
        i. Hazardous waste training
        ii. Grey Zone training
    c. Advanced
        i. Equipment training
        ii. Specialized Safety Training

d. Expert
    i. Mentor undergraduate or other graduate students
    ii. Do a presentation on one topic in safety

4. Career and other Durable / Professional Skills
    a. Novice
        i. Make a resume/CV
        ii. Participate in group activities
        iii. Accept responsibility for mistakes
        iv. Active listening skills
        v. Support of colleagues through participation of their recognition
    b. Intermediate
        i. Update resume x4+ (specialized resumes)
        ii. Attend job fair
        iii. Go to career services
        iv. Appropriate handling of conflict when necessary
        v. Thoughtfully answer and defend your viewpoint in conflict
    c. Advanced
        i. Nominate group members for award/ write recommendation letter
        ii. Attend job fair x4+
        iii. Mentor undergraduates & new students
        iv. Appropriate response to critique of work/behavior
    d. Expert
        i. Mock interviews
        ii. Design your own experiments
        iii. Get a job!
    e. Other potential topics to discuss levels with your mentor/mentee
    Note: Some of these may overlap with others already listed in this document.
        i. **Communicate effectively** with a wide range of audiences
        ii. Recognize **ethical** and professional responsibilities
        iii. Consider the **impact** of engineering solutions **on society**
        iv. Function effectively on a team: be **collaborative** and **inclusive**
        v. **Societal** and **cultural awareness**

5. Laboratory skills
    a. Novice
        i. Technical equipment/skills training
        ii. Write protocol for technical equipment/procedure
        iii. Goniometer training
        iv. Prepare XPS samples
        v. Run plasma reactor
    b. Intermediate
        i. Train group in equipment/skills
        ii. Attend AVS short course
        iii. Write Materials and Methods for first paper
    c. Advanced
        i. Analyze Date gained from tests
        ii. Fix technical equipment
    d. Expert
        i. Run Technical equipment alone
        ii. Write chapter 2 of dissertation/thesis
        iii. Propose and defend a new set of experiments based on your research successfully

6. Engineering / Technical Skills
    a. Novice
        i. Learn basics of MatLab
        ii. Learn basics of Autocad/Makerbot
        iii. 3D print minion
    b. Intermediate
        i. 3D print your own design
    c. Advanced
        i. File design patent
    d. Expert
        i. Make a prototype
        ii. Design future iteration of prototype
    e. Other potential topics to discuss levels with your mentor/mentee
    Note: Some of these may overlap with others already listed in this document.
        i. Ability to **solve complex problems** applying engineering, math & science
        ii. Apply **engineering design** to produce solutions
        iii. Develop and conduct appropriate **experimentation**
        iv. Use **engineering judgement** to draw conclusions
        v. Acquire and apply new **knowledge**

7. Supportive STEM Skills (e.g., Biology Skills)
    a. Novice
        i. Write protocol for each cell type you're working with
        ii. Passage 1 cell line to 15 without contamination
        iii. Grow bacteria into isolated colonies
    b. Intermediate
        i. Freeze/bring up cells
        ii. Work with multiple cell types
        iii. Perform a pop off experiment
    c. Advanced
        i. Do confocal microscopy
        ii. Do large bacterial cultures without contamination
        iii. Work with multiple cell types at the same time without contamination
    d. Expert
        i. Train an undergraduate
        ii. Perform assays such as XTT, live/dead

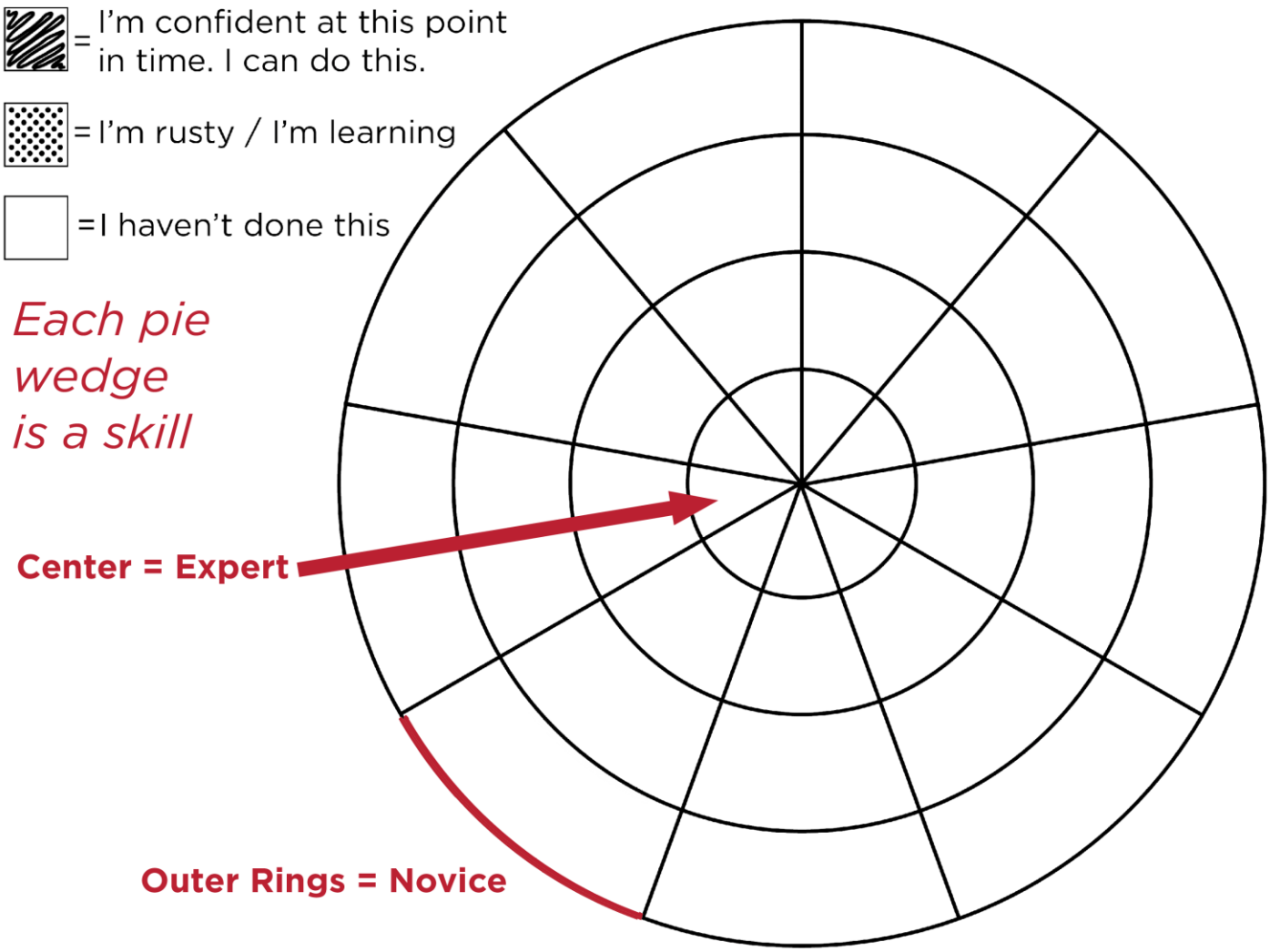
8. Ethics
    a. Novice
        i. Grey Zone training
        ii. Intro Bias Training
        iii. Inclusivity Training
    b. Intermediate
        i. Discuss case study
        ii. Research Practices/Ethics class
        iii. Unlearning bias training
    c. Advanced
        i. Present on topic of choice in ethics
        ii. Attend ethics seminars(s)
    d. Expert
        i. Negotiate Authorship

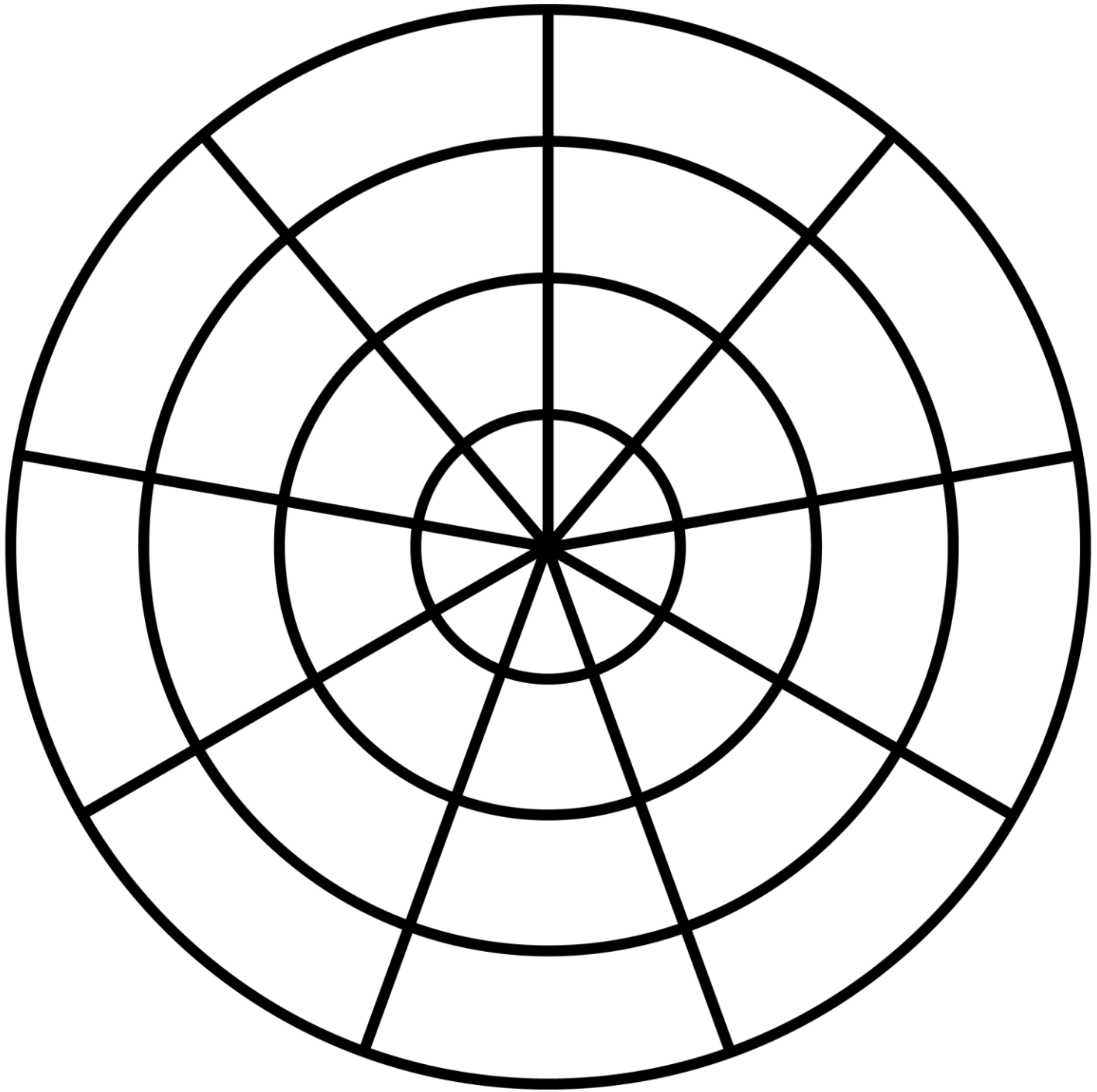
9. *Skill of your choice as appropriate for your field*
    a. Novice
        i. [fill in the blank for assessment]
    b. Intermediate
        i. [fill in the blank for assessment]
    c. Advanced
        i. [fill in the blank for assessment]
    d. Expert
        i. [fill in the blank for assessment]

SECTOND, develop the VISUAL REPRESENTATION OF YOUR SKILLS as they currently stand.

Using the blank pie chart on the following page, create a visual representation of your current skills that you assessed in the previous pages. Each pie wedge should be a set of skills (e.g., one wedge is for oral presentation skills, another for ethics skills, etc.). The concentric circles represent which skill level you've reached: novice, intermediate, advanced, or expert. An example is provide on the final page of this document.

Over time in your program / academic or career journey, you should see your skill set improve, and the circles will become more filled in. **Keep in mind** that you don't have to achieve 100% expertise in all things prior to graduating / the end timeframe that is appropriate for your goal / degree / training. Instead, you should **be looking to improve your skills** as you go through your journey.

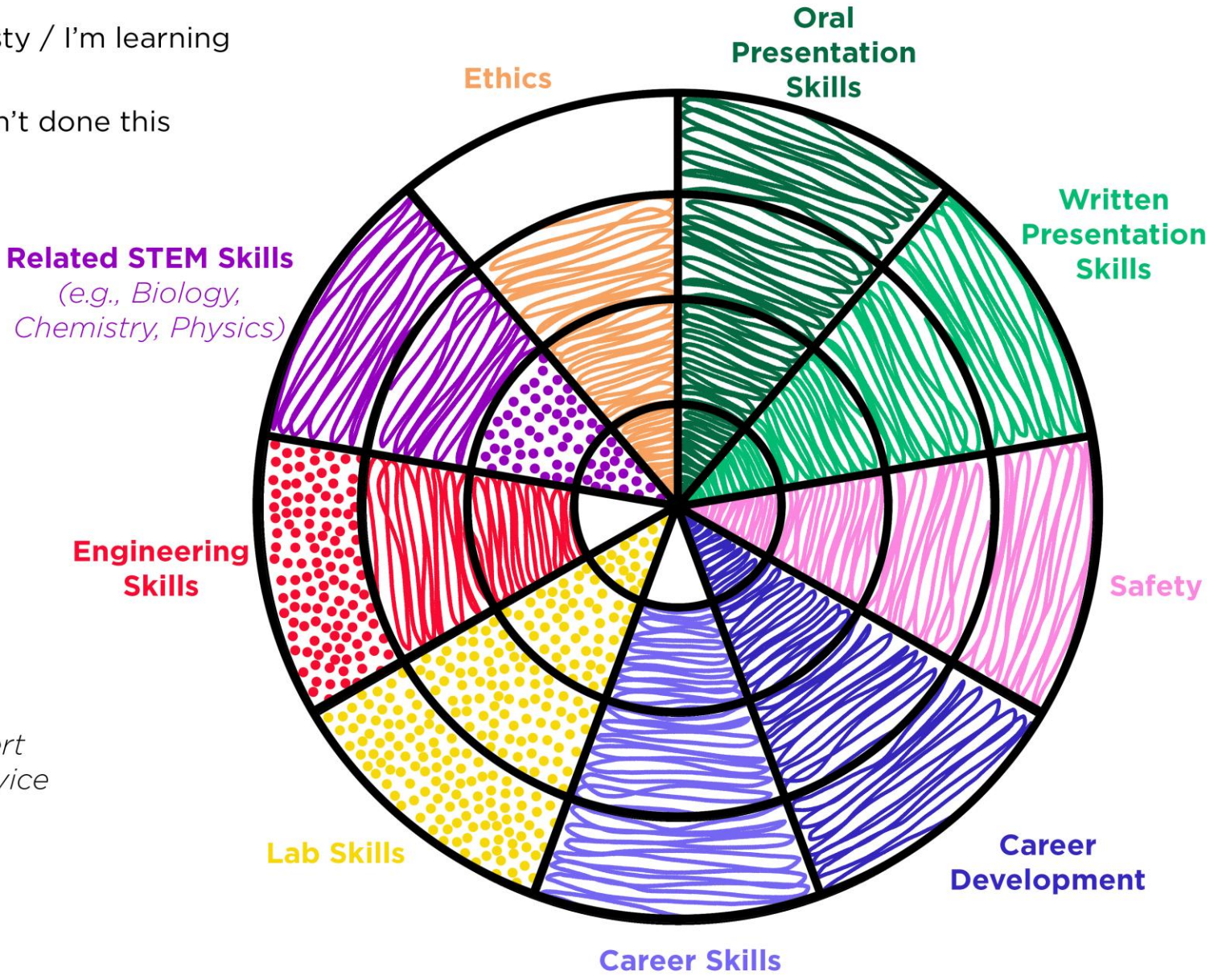




= I'm confident at this point in time. I can do this.

= I'm rusty / I'm learning

=I haven't done this



Remember
Inner = Expert
Outter = Novice

Example from Dr. Heather E. Cannavan (Univ. of NM) 2/20/24