Epidemiology Preceptorship

Introduction

Preceptorships are guided learning experiences through a quantitative, research-oriented project and not an independent study activity. Epidemiology Preceptorships are designed for MS non-thesis students to receive research training. Topics and activities must be within the domains of public health and epidemiology and they must be in line with the general plans and goals of the student. Preceptorships are not limited to any particular geographic site. The scope should be narrower than a thesis so that it is doable within the allotted credits and in one semester. It is typical that the student will spend substantial time planning for the project during the semester before registering for the Preceptorship. Depending on the expected duration, it is also acceptable to register for partial credit over two sequential semesters.

Rules for preceptorship credit

Preceptorships should have a minimum of 30 hours of total activity for each semester-hour of credit sought (minimum of 3 credits [i.e. 90 hours of activity]).

Preceptorship course director

One member of the Epidemiology faculty is designated each year to oversee preceptorship experiences. The Preceptorship Course Director for the academic year can be found on the Epidemiology website under Student Forms and Resources. The current Preceptorship Course Director for 2020-2021 is Wei Bao, MD, PhD.

Preceptorship advisor

The preceptorship advisor is the faculty member who directly supervises the student's project. It is preferred that the advisor be a primary faculty member in the Department of Epidemiology. However, a secondary faculty member or non-Epidemiology faculty member may be the advisor as long as a primary faculty member agrees to jointly advise the project. In this case, the primary faculty member is designated the "advisor-of-record". It is the student's responsibility to find advisor(s). The student registers for the preceptorship under the advisor-of- record's instructor section.

Prior to starting the preceptorship

1. **Preceptorship prospectus**. The student completes a preceptorship prospectus which must be approved by her/his preceptorship advisor and the preceptorship course director and the form signed by both. Items to be included are: goals, specific aims, the name of the preceptor, the sponsor of the preceptor, the amount of time each week is expected to be devoted to the activity and to meeting with the preceptor, the general nature of the activities, and the expected outcome or product at the end of the preceptorship. A copy of the prospectus form should be submitted to the Graduate Program Coordinator.
2. **Human Subjects Protections (IRB) certification.** MS students to pursue preceptorship are required to provide evidence that they have completed an approved education program in human subjects protections program. This should be done at the start of the preceptorship. More information is available at the University of Iowa's Certification in Human Subject Protections website.

Process and deliverables of the preceptorship

1. **Supervised research.** The student conducts supervised epidemiology research under direct supervision by the preceptorship advisor. Milestones of the supervised research include: complete literature review with a table that summarizes key characteristics of previous relevant research, identify an existing dataset or collect original data, perform data cleaning and data management, conduct statistical analysis (main analysis, secondary analysis, sensitivity analysis, etc.), and create tables and figures that summarize the research findings. The student should report the progress of each milestone to the preceptorship advisor.

2. **Scientific paper.** The student will produce a publication-quality report, i.e., a scientific paper, summarizing his/her experience with epidemiologic research and data analysis. The student should prepare the paper as a complete document with title page, abstract, background, methods, results, discussions, and conclusions, according to Author Instructions of a medical journal (such as JAMA) or an epidemiology journal (such as American Journal of Epidemiology). The paper should follow standard reporting guidelines (i.e., STROBE, CONSORT, PRISMA, etc.). After the advisor receives the report, he/she will complete the preceptorship evaluation form and report and then submit it to the Graduate Program Coordinator and the Preceptorship Course Director. Guidelines for authorship follow ICMJE criteria. Publication in the scientific literature is not required but is a desirable goal. The advisor will review and approve the recommended author list and all authors will have opportunity to review and approve the paper prior to publication. If publication is agreed upon as a goal, the student must commit to participating fully in the publication process which may not be completed until after the conclusion of the Preceptorship. If the student does not pursue publication or respond to related requests in a timely manner, then the preceptor reserves the right to pursue publication and change the authorship if appropriate or necessary.

3. **Scientific poster.** Each Epidemiology MS student is required to present at least 1 scientific poster at the department level and is encouraged to present at the international, national, regional, state, or university level, at some point in the student's program before graduation. For MS non-thesis students, this poster requirement takes the place of an oral seminar presentation as part of the Preceptorship requirement. Non-thesis students would typically formulate preceptorship research into a poster presentation, though the requirement may be met by poster presentation of other research, such as from an independent study or research related to employment. The poster must be submitted for review to the preceptorship mentor a minimum of 10 days before the poster session. A Department of Epidemiology poster session is held at the end of the fall and spring semesters.

Grading

At the end of the preceptorship the preceptorship advisor or advisor-of-record will assign the final grade. To receive a grade of Satisfactory, students must receive a total score of 80 or above according to The rubric that is depicted as follows.

It is expected that the advisor will provide feedback on written deliverables. The advisor assigns a score for each component and may allow multiple drafts to be submitted for review. The

advisor should provide feedback on drafts of the final paper, behaving as an authentic co-author and mentor, but should grade the paper based on the student's performance.

Components	Grading points	Exemplary	Proficient	Unsatisfactory	Score
Process Deliverables (40%)	Complete written literature review with a table that summarizes key characteristics of previous relevant research (5%)	*4-5 points*	*2-3 points*	*0-1 point*	**/5 points**
		Demonstrates subject-matter expertise, establishes project is novel and significant, provides background sufficient to understand the project is feasible and well-planned	Partially complete	Unclear or incomplete	
	Identify an existing dataset or collect original data. Written explanation of study design, inclusion/exclusion criteria, data collection methods, data dictionary, and data source explanation (e.g. source documents, data collection tools) (10%)	*9-10 points*	*7-8 points*	*0-6 points*	**/10 points**
		Clearly stated, well-developed rationale for chosen methods, complete documentation	Adequate explanation, but lacking clarity	Unclear, insufficient explanation leads to confusion by the reader	
	Perform data cleaning and data management using best practices (e.g. EPID:5600). Document actions taken in shareable log (5%)	*5 points*		*0 points*	**/5 points**
		Anticipates issues, is thorough and seeks advice. Log entries are clear		Does not keep a log or makes minimal effort to organize data	

		9-10 points	*7-8 points*	*0-6 points*	**/10 points**
	Conduct statistical analysis (main analysis, secondary analysis, sensitivity analysis, etc.) Written analysis plan specifying variable definitions, descriptive analysis, model selection, hypothesis tests (10%)	Clearly stated and thorough	Adequate explanation but lacking clarity	Unclear, insufficient explanation leads to confusion by the reader	
	Create tables and figures that summarize the research findings including substantive titles, proper organization and formatting, thorough footnotes, reproducible and consistent table totals (10%)	*9-10 points*	*7-8 points*	*0-6 points*	**/10 points**
		Clear, accurate, thorough attention to detail, organized	Mostly clear and accurate, may have minor organization errors or missing a few details	Organization must be inferred by reader; numerous errors in structure and/or detail	
Outcome Deliverables (60%)					
Scientific paper (40%)	Have a <u>complete</u> document with title page, abstract, background, methods, results, discussions, and conclusions (5%)	*5 points*		*0 points*	**/5 points**
		All sections are present		Missing one or more sections	
		13-15 points	*11-12 points*	*0-10 points*	**/15 points**

	Knowledge: Demonstrate appropriate understanding of epidemiologic study designs and data analysis methods (15%)	Link between research question and study design is clear. Demonstrates clear knowledge and understanding of epidemiology study design and analysis	Link between research question and study design may be implicit or partially complete. Demonstrates some knowledge and understanding of epidemiology study design and analysis. Minor errors may be present	Link between research question and study design unclear or incomplete. Demonstrates little knowledge and understanding of epidemiology study design and analysis. One or more major errors in design or analysis.	
	Support/Detail: Demonstrate a <u>thorough</u> consideration of epidemiologic concepts, which may include some of or all the following: measures of association, confounding, mediation, effect modification, internal validity, generalizability, and causal inference criteria (15%)	*13-15 points*	*11-12 points*	*0-10 points*	**/15 points**
		Thorough and complete. Includes specific details about how epidemiologic concepts were addressed. Discussion includes thorough assessment of bias.	Mostly complete, a few gaps may exist. Includes few details about how epidemiologic concepts were addressed. May be some errors in assessment of bias.	Incomplete, several gaps exist. Does not include details about how epidemiologic concepts were addressed. May be some errors in assessment of bias.	
	Follow the reporting guidelines (i.e., STROBE, CONSORT, PRISMA, etc.) with a checklist (5%)	*5 points*		*0 points*	**/5 points**
		Follows reporting guideline with a checklist		Does not follow the reporting guidelines with a checklist	

Scientific poster (20%)	Poster content: Be consistent with the scientific paper (10%)	*10 points*		*0 points*	**/10 points**
		Consistent		Inconsistent	
	Poster design: Be well-organized and reader-friendly (10%)	*9-10 points*	*7-8 points*	*0-6 points*	**/10 points**
		Purpose is clear; ideas are clearly organized and presented in logical sequence; effective font and illustrations	Purpose is implicit; main idea is evident, but the organizational structure may need to be strengthened; ide as may not flow logically; may be some legibility or clarity issues with text or illustrations	Main purpose is not clear; ideas may not be focused; main points are difficult to identify; undeveloped structure; no logical sequence of information	
Total score (full score 100)					**/100 points**