

PH.D. Degree Requirements



Requirements for PH.D. Degree in Environmental and Occupational Hygiene or Occupational Safety/Ergonomics

OVERVIEW

This document describes the pathway which a student must follow to obtain the Ph.D. degree. On this page a brief summary is given of material described in more detail further below.

The student applies for admission to the University of Cincinnati through the Office of Graduate Studies to the Director of the Training Program. Upon admission, an academic advisor is assigned. By the end of the first year, committee of faculty members is formed to help select elective courses and to guide the student towards qualification. This Academic Advisory Committee (AAC) is temporary and is later supplanted by the Qualifying Examination Committee and then by the Dissertation Committee which will oversee the student's research.

At least 18 graduate credits of formal courses are required in addition to the credits of required course work for the M.S. degree in Environmental and Occupational Hygiene. Additional elective courses or research credit must be taken to replace waived required courses. The student must maintain an overall grade point average of 3.0 in the formal course work with no more than 20% of the credits being below 3.0. The elective courses are selected by the student and the Academic Advisory Committee to provide a proper background for the anticipated area of research. The University requires a total of 135 credits of graduate work for the Ph.D. degree. The core courses are supplemented by research credits to reach this total. By the end of the first year the student looks for a potential research advisor by interviewing with each faculty member to explore mutual research interests.

At the end of the second or early part of the third year of study, the student presents three original proposals at the time she/he applies to the Degrees Committee for the appointment of a Qualifying Examination Committee. Upon acceptance of these, the student develops an extended original proposal for research which is the subject of an oral examination. A student already holding a M.S. degree can sit for the exam earlier. Upon passing this qualifying examination, the student is admitted into candidacy for the Ph.D. degree and proceeds to do the dissertation research as specified by the rules of the Department and the University. With the preparation and successful defense of a dissertation on this research, the student has completed all of the departmental requirements for a Ph.D. degree.

The sections which follow contains detailed guidelines developed by the Environmental and Occupational Hygiene faculty.

I. ADMISSION TO PH.D. PROGRAM

A. Admission from Outside the Department: The prospective student applies for admission to the University of Cincinnati through the Graduate Studies Office to the Director of the Training Program. The Graduate Studies Office ensures a completed application package.

The application is evaluated by the Director of the Training Program and the faculty of the Training Program.

B. Admission From Within the Department: The student applies for admission through the Graduate Studies Office to the Director of the Training Program as in I.(A). The package must include a letter of support from 2 faculty members within the Training Program. The application is evaluated as above.

C. Academic Advisory Committee: Upon admission, the student is assigned an academic advisor by the Program Director and the faculty. The academic advisor, after discussion with the student and with the concurrence of the Program Director and the faculty of the Training Program, enlists two additional individuals, at least one of which is a member of the faculty of the relevant training program. This group is formed by the end of the first year and constitutes the Academic Advisory Committee (AAC) which is responsible for overseeing the progress of the student in the selection of electives and towards qualification.

The academic advisor shall be a full-time member of the faculty of the Department.

II. COURSE WORK REQUIREMENTS

The University of Cincinnati requires that a total of 135 graduate credits be completed for the Ph.D. degree. These consist of a mixture of credits for course work and research.

A. Course work: The student takes the required courses for the Environmental and Occupational Hygiene or Occupational Safety and Ergonomics program in effect at the date of admission. The course listings currently in effect follow:

REQUIRED COURSES FOR

ENVIRONMENTAL AND OCCUPATIONAL HYGIENE

| Quarter | Course | Number | Credits |
|------------------|--|-------------|----------|
| Autumn Year 1 | Environmental Health Seminar | 26-ENV-701 | 1 |
| | Principles of Occupational Exposure Assessment | 26-EIH-707 | 3 |
| | Practice in Occupational Exposure Assessment I | 26-EIH-741 | 3 |
| | Programmatic Aspects of Occupational Health & Safety | 26-EIH-781 | 1 |
| | Introduction to Biostatistics | 26-BE-787 | 4 |
| | Identification of Potential Workplace Exposures | 26-EIH-904 | 2 |
| | Occupational Safety Engineering ^a | 20-INDS-710 | 3 |
| | Current Topics in Industrial Hygiene | 26-EIH-981 | <u>1</u> |
| | | 18 | |

| | | | |
|------------------|---|------------|----------|
| Winter Year 1 | Environmental Health Seminar | 26-ENV-702 | 1 |
| | Practice in Occupational Exposure Assessment II | 26-EIH-742 | 3 |
| | Introduction to Epidemiology | 26-BE-776 | 3 |
| | Survey of Environmental Toxicology | 26-TOX-782 | 3 |
| | Physical Aspects of the Environment | 26-EIH-790 | 3 |
| | Identification of Potential Workplace Exposures | 26-EIH-905 | 2 |
| | Current Topics in Industrial Hygiene | 26-EIH-982 | <u>1</u> |
| | | | 16 |

| | | | |
|------------------|---|------------|------------|
| Spring Year 1 | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Physical & Biological Aspects of Aerosols | 26-EIH-743 | 3 |
| | Evaluation of Workplace Exposures | 26-EIH-775 | 3 |
| | Principles of Ergonomics | 26-OSE-792 | 3 |
| | Current Topics in Industrial Hygiene | 26-EIH-983 | 1 |
| | Electives ^b | --- | <u>Var</u> |
| | | | 15 minimum |

Summer^c

| | | | |
|------------------|--|------------|------------|
| Autumn Year 2 | Environmental Health Seminar | 26-ENV-701 | 1 |
| | Occupational Health, Hygiene and Safety Workshop | 26-EIH-819 | 2 |
| | Teaching Practicum in Environmental Health | 26-ENV-725 | 1 (min) |
| | Hazardous Materials Management | 26-EIH-834 | 2 |
| | Health Physics | 20-NUC-640 | 3 |
| | Current Topics in Industrial Hygiene | 26-EIH-981 | 1 |
| | Research ^d | 26-ENV-991 | Var |
| | Electives | --- | <u>Var</u> |
| | | | 15 minimum |

| | | | |
|--------|--|-------------|------------|
| Winter | Environmental Health Seminar | 26-ENV-702 | 1 |
| | Occupational Health, Hygiene and Safety Workshop | 26-EIH-820 | 2 |
| | Special Topics | 26-EIH-971 | 1 |
| | Ethics in Research | 26-GNTD-730 | 1 |
| | Current Topics in Industrial Hygiene | 26-EIH-982 | 1 |
| | Effective Methods of Worker Health and Safety Training | 26-EIH-846 | 2 |
| | Research | 26-ENV-991 | Var |
| | Electives | --- | <u>Var</u> |
| | | | 15 minimum |

| Quarter | Course | Number | Credits |
|------------------|--|------------|------------|
| Spring Year 2 | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Occupational Health, Hygiene and Safety Workshop | 26-EIH-821 | 2 |
| | Current Topics in Industrial Hygiene | 26-EIH-983 | 1 |
| | Design and Management of Field Studies | 26-BE-975 | 3 |
| | (or) | | |
| | Experimental Design | 26-BE-789 | 4 |
| | Research | 26-ENV-991 | Var |
| | Electives | --- | <u>Var</u> |
| | | | 15 minimum |

Summer

Year 3 through Graduation

| | | | |
|--------|--|------------|------------|
| Fall | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Current Topics in Industrial Hygiene | 26-EIH-983 | 1 |
| | Research/Dissertation Research | 26-ENV-991 | var |
| | Electives | | <u>var</u> |
| <hr/> | | | |
| Winter | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Current Topics in Occupational Hygiene | 26-EIH-983 | 1 |
| | Research/Dissertation Research | 26-ENV-991 | var |
| | Electives | | <u>var</u> |
| <hr/> | | | |
| Spring | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Current Topics in Occupational Hygiene | 26-EIH-983 | 1 |
| | Research/Dissertation Research | 26-ENV-991 | var |
| | Electives | | <u>var</u> |

- a) Acceptable substitutions for this class are: 20 MINE 779 Safety Engineering and Product Liability (winter quarter) or 20 MINE 621 System Safety I.
- b) Choose a minimum of 9 credits from the following list:
- Stress and Cognition/ 15 PSYCH 824 (3)
 - Human Biological Monitoring & Biomarkers/ 26 EIH 843 (3)
 - Biomechanical & Physiological Aspects of Muscular Activity/ 26 OSE 744 (3)
 - Applied Risk Assessment/ 26 TOX 878 (3)
 - Basic Principles of Environmental Law/ 20 CEE 657 (3)
 - Management of Professionals/ 20 MINE 640 (3) or Occupational Health Management/ 26 OCCM 748 (2)
 - Methods to Obtain Complete Occupational Histories/ 26 EIH 845 (2)
 - Survey of Public Health/ 26 EHS 746 (3) (offered only in academic years beginning with even numbers)
 - System Safety I/ 20 MINE 621 (3) (not if taken in place of 20 INDS 771)
 - Respirators & Respiratory Protection/ 26 OCCM 854 (2)
 - Basics of Occupational Medicine/ 26 OCCM 786 (2) (not offered 2005-06)
 - Basics of Environmental Medicine/ 26 OCCM 987 (2) (offered only in academic years beginning with odd number; not offered 2005-06)
- c) A summer of internship is recommended for students with no prior EOH work experience. No course credit is given.
- d) A form is available in Graduate Studies office must be completed and returned to Graduate Studies. Please refer to the specific sequence of steps for the qualifying process and the completion of the dissertation, contained in this document.

The student is expected to take all courses listed above. Any required course may be waived with the permission of the instructor and advisor when the student has had the equivalent course content; the graduate studies office has a form to document these approvals. Another course with equivalent credit hours must then be selected. The academic advisor will assist in this process.

**REQUIRED COURSES FOR
OCCUPATIONAL SAFETY AND ERGONOMICS**

| Quarter | Course | Number | Credits | |
|------------------------|--|--------------|------------|--|
| Autumn Year 1 | Environmental Health Seminar | 26-ENV-701 | 1 | |
| | Practice in Occupational Exposure Assessment I | 26-EIH-741 | 3 | |
| | Identification of Potential Workplace Exposures | 26-EIH-904 | 2 | |
| | Introduction to Biostatistics | 26-BE-787 | 4 | |
| | Principles of Occupational Exposure Assessment | 26-EIH-707 | 3 | |
| | Current Topics in Industrial Hygiene | 26-EIH-981 | <u>1</u> | |
| | | | 16 | |
| Winter | Environmental Health Seminar | 26-ENV-702 | 1 | |
| | System Safety I | 20- MINE-621 | 3 | |
| | Safety Engineering & Product Liability | 20- INDS-779 | 3 | |
| | Physical Aspects of Environment | 26-EIH-790 | 3 | |
| | Identification of Potential Workplace Exposures | 26-EIH-905 | 3 | |
| | Introduction to Epidemiology | 26-BE-776 | 3 | |
| | Current Topics in Industrial Hygiene | 26-EIH-982 | <u>1</u> | |
| | | | 17 | |
| Spring | Environmental Health Seminar | 26-ENV-703 | 1 | |
| | System Safety II | 26-MINE-622 | 3 | |
| | Principles of Ergonomics | 26-OSE-792 | 3 | |
| | Introduction to Measurement Techniques in Ergonomics | 26- OSE-748 | 3 | |
| | Mgt. of Professionals | 20-MINE-640 | 3 | |
| | (or) | | | |
| | Occupational Health Management | 26-OCCM-748 | 2 | |
| | Current Topics in Industrial Hygiene | 26-EIH-983 | 1 | |
| Electives ^a | ----- | <u>Var</u> | | |
| | | | 15 minimum | |
| Summer | Ergonomic Internship ^b | | | |
| Autumn Year 2 | Environmental Health Seminar | 26-ENV-701 | 1 | |
| | Health Physics | 20- NUC-640 | 3 | |
| | Occupational Health Hygiene and Safety Workshop | 26-ENV-819 | 1 | |
| | Hazardous Materials Management | 26-EIH-834 | 2 | |
| | Biomechanical and Physiological Aspects of Muscular activities | 26-OSE-744 | 3 | |
| | Current Topics in Industrial Hygiene | 26-EIH-981 | 1 | |
| | Research ^c | 26-ENV-991 | <u>Var</u> | |
| | Electives | ----- | <u>Var</u> | |
| | | | 15 minimum | |
| Winter Year 2 | Environmental Health Seminar | 26-ENV-702 | 1 | |
| | Teaching Practicum | 26-EIH-725 | 1-3 | |
| | Occupational. Health, Hygiene and Safety Workshop | 26-ENV-820 | <u>Var</u> | |
| | Ethics in Research | 26-GNTD-730 | 2 | |
| | Current Topics in Industrial Hygiene | 26-EIH-982 | 1 | |
| | Research | 26-ENV-991 | 1 | |
| | Electives | ----- | <u>Var</u> | |
| | | | 15 minimum | |

| Quarter | Course | Number | Credits |
|---------|--------|--------|---------|
|---------|--------|--------|---------|

| | | | |
|------------------|--|------------|------------|
| Spring Year 2 | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Occupational Health, Hygiene and Safety Workshop | 26-EIH-821 | 2 |
| | Current Topics in Industrial Hygiene | 26-EIH-983 | 1 |
| | Design and Management of Field Studies | 26-BE-975 | 3 |
| | (or) | | |
| | Experimental Design | 26-BE-789 | 4 |
| | Research | 26-ENV-991 | Var |
| Electives | ----- | <u>Var</u> | |
| | | | 15 minimum |

Summer

Year 3 through Graduation:

| | | | |
|------|--------------------------------------|------------|------------|
| Fall | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Current Topics in Industrial Hygiene | 26-EIH-983 | 1 |
| | Research/Dissertation Research | 26-ENV-991 | var |
| | Electives | | <u>var</u> |

| | | | |
|--------|--|------------|------------|
| Winter | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Current Topics in Occupational Hygiene | 26-EIH-983 | 1 |
| | Research/Dissertation Research | 26-ENV-991 | var |
| | Electives | | <u>var</u> |

| | | | |
|--------|--|------------|------------|
| Spring | Environmental Health Seminar | 26-ENV-703 | 1 |
| | Current Topics in Occupational Hygiene | 26-EIH-983 | 1 |
| | Research/Dissertation Research | 26-ENV-991 | var |
| | Electives | | <u>var</u> |

a) Student is expected to take all course above and to choose a minimum of 9 credits from the following list:

- Introduction to Biomechanics/ 20-MECH-685 (3)
- Organizational Behavior & Theory / 22-MGMT-711 (4)
- Basics of Occupational Medicine/26-OCCM-786 (2) (offered only in academic years beginning with odd numbers; not offered 2005-06)
- Occupational Safety / 20-INDS-520/710 (3)
- Human Factors Analysis / 20-INDS-624 (3)
- Regression Analysis / 26-BE-788 (3)
- Stress and Cognition / 15-PSYCH-824 (3)
- Basics of Environmental Medicine /26-OCCM-987 (2) (offered only in academic years beginning with odd numbers; not offered 2005-06)
- Nonparametric Statistics / 26-BE-789 (3)
- Human Body Dynamics / 20-MECH-687 (3)
- Human Factors Design / 20-INDS-630 (3)
- Effective Methods of Worker Health and Safety Training/ 26-EIH-846 (2)
- Practice in Occupational Exposure Assessment II/ 26-EIH-742 (3)
- Evaluation of Workplace Exposures/ 26-EIH-775 (3)

- b) Plans for an internship are to be discussed with the Advisor.
- c) A form available in Graduate Studies office must be completed and returned to Graduate Studies. Please refer to the specific sequences of steps for the qualifying process and the completion of the dissertation, contained in this document.

The student is expected to take all courses listed above. Any required course may be waived with the permission of the instructor and advisor when the student has had the equivalent course content; the graduate studies office has a form to document these approvals. Another course with equivalent credit hours must then be selected. The academic advisor will assist in this process.

Courses may be waived with the approval of the course instructor. An additional elective course or research credit must be taken for the same or greater number of credits than the waived course. A maximum of 20 credit hours of the waived classes can be substituted by research credits. Identification of Workplace Exposures and other classes may have additional requirements for Ph.D. students. The instructor will describe these during the first class session, as appropriate.

B. 18 Graduate Credits of formal courses in a supporting program: The courses taken are subject to approval of the student's Academic Advisory Committee. These courses serve to develop expertise as the groundwork for a student's research efforts. More than 18 credits are often taken. One of the following two courses has to be included among the 18 credits: Experimental Design or Design and Management of Field Studies.

C. Seminar Series: The student is required to register for and complete the Division Seminar (Current Topics in Occupational Hygiene) and the Departmental Seminar. Seminar credits are counted as course credits but do not count towards the required 18 additional graduate credits of formal courses. It is expected that students will attend appropriate seminars for purposes of availing themselves of these unique educational opportunities; these may be division, department or ERC-wide offerings.

D. Teaching Practicum: The student is required to take teaching practicum for at least 2 credit hours.

E. Minimum Performance Requirements: The student must maintain a GPA of 3.0 to continue in the Ph.D. program. No more than 20% of the course work hours may be below a grade of 3.

III. QUALIFYING EXAMINATION

The purpose of this procedure is to determine if a student is ready to undertake research at the doctoral level. It is to be taken after the Language Examination and almost all of the formal course work. See Departmental policy.

A. Application to Degrees Committee: This package is submitted to the Degrees Committee under the signatures of the Chairperson of the Academic Advisory Committee and the Program Director. It must contain the following:

- (1) A cover letter which requests that the student sit for the Qualifying Examination. This letter is to be co-signed by the Advisor.
 - (2) Evidence to the effect that Items II and III above have been completed. This material is available in the Graduate Studies Office in the student's file and may be copied. The formal course work requirements may not be entirely complete but should be substantially finished.
 - (3) A list of prospective members of the Examining Committee with an indication from each of a willingness to serve. This list is intended to be suggestive rather than exclusive.
 - (4) Three short proposals of original research prepared by the student. Each proposal shall be distinct and not simply another aspect of the same problem. Ideally, the three will illustrate the breadth of the
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student's interests. The proposals consist of a statement of an original, testable hypothesis carefully justified by reference to several articles in the current literature of scientific significance and feasibility. Detailed descriptions of methodology are inappropriate at this point. The student should keep the length of each proposal to fewer than three pages (See Departmental policy).

B. The Examining Committee: This committee is usually appointed by the Degrees Committee from the list provided in the application. It will consist of at least three (preferably 5) members of the University faculty, one of whom must be from within the faculty of the Training Program and one of whom must be drawn from outside the Department of Environmental Health. The Chairperson of the Academic Advisory Committee sits as a non-voting member of the committee. This individual is responsible for the overall administration of the examination which includes (1) convening the Examining Committee; (2) ensuring that the guidelines are followed, and (3) issuing the final report to the Degrees Committee.

C. Form of the Examination: This is at the discretion of the Examining Committee with the approval of the Degrees Committee. Historically, it has consisted of the selection of one of the proposed research projects which the student develops into a full-fledged research proposal under the format of a NIH or NSF grant application. Once the full proposal has been accepted by the Examining Committee, the student submits to an oral examination. A formal announcement to the Department faculty has to be posted and distributed at least 14 days prior to the exam. This consists of a presentation of the proposal followed by a period of questions. The questions need not be confined to the proposal and serve to test the overall state of the examinee's knowledge and ability to formulate a research plan. Performance on the examination is decided on the basis of a simple majority of the voting members of the committee with the options being:

- (1) pass
- (2) conditional pass (passing is contingent upon further work on the part of the student, e.g., written report in a certain area, taking a specific course, etc.)
- (3) re-examination
- (4) fail

Should the student fail the examination, a petition to the faculty through the Program Director must be made for continuation in the program.

D. Timeframe: The procedure is to be completed within 2 months of the formation of the Examination Committee. The qualifying examination is most often taken at the end of a student's second year or at the beginning of the third year.

E. Successful Completion: With the successful completion of the Qualifying Examination, the student becomes a candidate for the Ph.D. degree. The Ph.D. candidate is permitted an additional 5 years by the University to complete the degree. Training grant support is usually limited to a maximum of five years, including time prior to passing the qualifying examination.

IV. THE RESEARCH ADVISOR

By the end of the first year of study, the provisional Ph.D. student personally interviews with every faculty member within the Training Program concerning research interests/projects. As each interview is completed, the student will obtain the faculty member's signature on a form which is available from the graduate studies office. The student provides the completed form to the Director of the Training Program along with a suggestion for a research advisor and a letter from this individual indicating a willingness to serve in that capacity. The research advisor may be the initial advisor chairing the Academic Advisory Committee or a different faculty member, if that individual more closely matches the student's research interests. If a change is desired prior to the Ph.D. Qualifying Exam, a memo to the Graduate Studies Office with a copy to the Director of the Training Program suffices, if it carries the signature of the initial and new advisor. Whenever the student's Ph.D. focus emerges, it is best that the principal advising be done by the research advisor. This should occur, at the latest, when the Dissertation Committee is formed.

V. DISSERTATION RESEARCH

After passing the Qualifying Exam, the student is admitted into candidacy and formally begins research

under the direction of a Dissertation Committee. Typically, research has been proceeding on an informal basis. It should be formalized within six months of the admission to candidacy.

A. Dissertation Committee: The student with the chosen research advisor submits to the Degrees Committee a list of faculty members considered to be appropriate for the Dissertation Committee. At the same time, a Statement of Intent of the proposed research project in sufficient detail to permit the Degrees Committee to appreciate that the expertise required to approach the topic is included. The Degrees Committee appoints the Dissertation Committee in light of this information. It shall consist of at least:

- (1) The Research Advisor as chairperson
- (2) A full-time faculty member of the Training Program if the Research Advisor is not a member of the Training Program
- (3) A full-time faculty member from another Training Program within the Department of Environmental Health (strongly recommended)
- (4) A member from outside the Department of Environmental Health

Either the Research Advisor or two other members of the Dissertation Committee must be members of the Graduate Faculty of the University of Cincinnati. The policy for external thesis work is presented in the Departmental Guidelines.

B. Statement of Intent: The Statement of Intent is a concise description of the nature of the research project: hypothesis, significance, rationale and methods. The Degrees Committee will review the Statement of Intent and furnish to the candidate and the Research Advisor a written critique with an overall "Approval" or "Disapproved" rating. If the Statement of Intent is disapproved, the Degrees Committee shall provide the candidate a specific list of objections, criticisms and recommendations. The candidate shall furnish to the committee a revised Statement of Intent. The statement of intent also needs to be approved by the dissertation committee once the committee has been formed.

C. The Dissertation: Once the approval of the Degrees Committee is obtained, it is sufficient for the Dissertation Committee to provide a brief yearly report of the candidate's progress to the Program Faculty and the Degrees Committee. At the conclusion of the research project, the candidate will prepare a dissertation under the guidance of the Dissertation Committee. This is a written document which gives evidence of high scholarly achievement through independent, original research. Once the Dissertation Committee judges that the dissertation is complete, the research advisor arranges for a public defense of the dissertation through the Graduate Studies Office of the Department of Environmental Health. Notice of the defense must be posted at least two week prior to the scheduled date of defense. The Research Advisory shall serve as moderator for the oral defense which shall consist of (in order):

- (1) an oral presentation of the work by the candidate
- (2) a period of questioning of the candidate by the Dissertation Committee
- (3) a period of questions and comments by other members of the audience

At the conclusion of the defense, the Dissertation Committee will immediately meet to determine the acceptability of the dissertation and its defense. The candidate will immediately be informed of the results of this deliberation. If the dissertation is accepted, the Committee members will sign the acceptance sheet, and this will be conveyed to the Graduate Studies Office for transmission to the appropriate University offices. Should the dissertation not be accepted, the candidate meets with the Dissertation Committee within two weeks to discuss the problems and decide on a course of action. Another defense may be scheduled within a period of 2-6 months after the first defense.

NOTE: The guidelines stated above have been developed by the Environmental and Occupational Hygiene faculty. Further information is contained in the Departmental guidelines.