

**DEPARTMENT OF FAMILY AND PREVENTIVE MEDICINE SCHOOL
OF MEDICINE
UNIVERSITY OF UTAH**

**Graduate Programs in Occupational and Environmental Health
(MSOH, MOH and PhD in OEH)**

**ROCKY MOUNTAIN CENTER FOR OCCUPATIONAL AND
ENVIRONMENTAL HEALTH**

POLICIES AND PROCEDURES

Revised April 26, 2016

This document describes the academic and administrative steps involved in earning one of the three Occupational and Environmental Health Programs Degrees or certificate:

- (i) Master of Science in Occupational Health
- (ii) Master of Occupational Health and
- (iii) Doctor of Philosophy degree in Occupational and Environmental Health or
- (iv) Graduate Certificate of Occupational Safety and Health

The Graduate School and the Occupational and Environmental Health Programs both have specific requirements. This document outlines the combined academic requirements and procedures. Please note that some deadlines are fixed by the Graduate School and students who do not follow them may incur additional expenses that are their responsibility. Please consult the Programs Administrator Janet.Torkelson@hsc.utah.edu, [(801) 581-5056] for the Occupational and Environmental Health Programs (391 Chipeta Way, Suite C, Salt Lake City, Utah 84108) if you have any further questions.

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MSOH/MOH/PhD

Graduate Certificate of Occupational Safety and Health

Program Faculty

Kurt T. Hegmann, MD, MPH

Dr. Hegmann is the Dr. Paul S. Richards Endowed Chair in Occupational Safety and Health, Center Director of the Rocky Mountain Center for Occupational and Environmental Health and a Professor in the Department of Family & Preventive Medicine, University of Utah School of Medicine. He is boarded by the American Board of Preventive Medicine in the specialty of Occupational Medicine. He chaired the American Board of Preventive Medicine (2010-2012), the NIOSH Study Section (2010- 2012) and the Federal Motor Carrier Safety Administration's Medical Review Board (2006-2010). Dr. Hegmann is the Principal Investigator (PI) and Co-PI for numerous studies. Presently he is involved in two multi-million dollar, multi-state, grant cohort studies—Upper Limb Musculoskeletal Disorders and Low Back Pain—at the University of Utah. He also studies transportation medicine. He is Editor-In-Chief of the American College of Occupational and Environmental Medicine's Practice Guidelines. Dr. Hegmann has lectured throughout the United States and internationally. Dr. Hegmann teaches in the following courses: Administration and Management of Health and Safety Programs, Clinical and Behavioral Aspects of Occupational Injuries and Diseases, Clinical and Behavioral Aspects of Preventive Medicine, and Occupational Epidemiology. He is Course Director of the occupational injury epidemiology class.

Jeremy Biggs, M.D., M.S.P.H.

Dr. Biggs is Occupational Medicine Clinic Director and an Assistant Professor in the Rocky Mountain Center for Occupational and Environmental Health. His professional interests include the diagnosis, management and prevention of musculoskeletal injuries and illnesses, return to work programs for ill and injured workers, and workplace health promotion. Dr. Biggs contributes to the development of the American College of Occupational and Environmental Medicine's evidence-based practice guidelines as a Co-Editor (ACOEM's Occupational Medicine Practice Guidelines). He also is an investigator in a federally funded study of ergonomic and general medical factors that contribute to the risk of developing upper extremity pain. He teaches in graduate level courses, including Clinical and Behavioral Aspects of Occupational Injuries and Diseases, and advanced topics in occupational and environmental health. He graduated in 2006 from the University of Utah School of Medicine as a junior member of Alpha Omega Alpha (medical honor society) and was the recipient of the Deans Award. He completed a Master of Science of Public Health degree in 2002 and Occupational and Environmental Medicine residency at the University of Utah in 2009.

Donald Bloswick, PhD, CPE

Dr. Bloswick is a Professor and Director of Graduate Studies in the Department of Mechanical Engineering at the University of Utah where he teaches and directs research in the areas of ergonomics, safety, occupational biomechanics, and rehabilitation engineering. He is Director of both the Ergonomics and Safety Program and the Occupational Injury Prevention Research Training (OIPRT) program in The Rocky Mountain Center for Occupational and Environmental Health and holds adjunct appointments in the Department of Family and Preventive Medicine, Department of Bioengineering, Division of Physical Therapy, and Division of Occupational Therapy.

Don is a registered Professional Engineer and Certified Professional Ergonomist with 10 years of full-time industrial experience prior to entering academia. For the past 25 years he has served as an ergonomic and safety trainer and consultant to industry, OSHA, and the legal community throughout the United States. Don received a B.S. in Mechanical Engineering from Michigan State University, a M.S. in Industrial Engineering from Texas A&M University, an M.A. in Human Relations from the University of Oklahoma and earned his PhD in Industrial and Operations Engineering at the University of Michigan where he studied at the U.M. Center for Ergonomics. His research interests relate to industrial ergonomics, occupational biomechanics, rehabilitation ergonomics, and ergonomic applications and workplace designs for workers with disabilities.

Melissa Cheng, M.D., M.O.H., M.H.S.

Dr. Cheng is an Assistant Professor in the Rocky Mountain Center for Occupational and Environmental Health. She is a graduate of the University of Utah School of Medicine, and Johns Hopkins University where she received a Master's in Public Health (International Health). She joined the Occupational Medicine faculty at the University of Utah after completing her residency in 2011. Her professional interests include clinical care at the Occupational Medicine Clinic, teaching of residents and other graduate students, advancement of underprivileged students in the field of science, and research activities including work on the ongoing musculoskeletal cohorts and opioid medication usage among working populations. Her interest in teaching first started in Baltimore, MD where she taught sophomore chemistry in an inner city school during the school year and golf and rock climbing during the summer. Later, she developed an appreciation for graduate level education while as a Teacher's Assistant at Johns Hopkins University and at the University of Utah. In 2011, she was honored with the Paul S. Richards Scholarship for her outstanding work as a resident in Occupational and Environmental Medicine.

Kelli Graziano M.D., MOH

Dr. Kelli Graziano is a board-certified Occupational Medicine Physician. She graduated from the University of North Dakota School of Medicine in 2007 and received her Master of Occupational Health from the University of Utah in 2010. Dr. Graziano completed her residency in occupational medicine in 2011 at the University of Utah and specializes in the care of injured workers and the prevention of work related disease. In her free time, Dr. Graziano enjoys foreign travel, outdoor activities, and live music.

Lisa Gren, PhD, MSPH

Dr. Gren is Assistant Professor in the Public Health Division at the University of Utah. She currently teaches courses in biostatistics and research methods. Dr. Gren teaches the core Biostatistics I course for the OEH programs. Dr. Gren's research interests are in practice-based research in primary care, clinical epidemiology, and clinical trials methodology. Active areas of research include influenza surveillance in outpatient settings, utilization of clinical resources (including electronic medical records) for public health research, use of public health data in clinical decision-making, and operations and management of clinical trials. She is affiliated with the Utah Health Research Network (UHRN), Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO), National Lung Screening Trial (NLST), and Systolic Blood Pressure Intervention Trial (SPRINT).

Rod Handy, MBA, PhD, CIH

Dr. Rod Handy is Director of the Industrial Hygiene programs, Director of Graduate Degree Programs in Occupational and Environmental Health, which are housed in the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH) in the

Department of Family & Preventive Medicine (DFPM) in the School of Medicine at the University of Utah. The degrees in the Occupational and Environmental Health programs include: Master of Science in Occupational Health (MSOH), Master of Occupational Health (MOH), and Doctor of Philosophy (PhD) programs. He received a BS degree from Purdue University in 1983, an MBA from Ball State University in 1989, and a PhD (Environmental Engineering Sciences) from the University of Florida in 1995. Prior to coming to the University of Utah, Dr. Handy was a Tenured Professor at both Purdue University and the University of North Carolina Charlotte. His research interests include real-time sampling and monitoring, heat stress characterization, and indoor environmental quality. Dr. Handy has been board certified in industrial hygiene since 1999.

Matthew Hughes, MD, MPH

Dr. Hughes previously served as Deputy Director for the Rocky Mountain Center for Occupational and Environmental Health and Assistant Professor at the University of Utah, joining the faculty in 2008. He is currently responsible for one of the Occupational Health Clinics. Prior to his appointment, he developed an extensive background in corporate medical management as the Western Hemisphere Medical Director for BP and Associate Medical Director for Marathon Oil Company. He has led efforts to improve employee health and safety programs, international public health, and benefits related programs including absence management. He was a recipient of the American College of Occupational and Environmental Medicine (ACOEM) Corporate Health Achievement Award in 2003 for program excellence at Marathon Oil Company. Dr. Hughes is associate editor of the ACOEM Practice Guidelines.

Rodney R. Larson, PhD, MS, CIH

Dr. Larson is Associate Professor in the Department of Family and Preventive Medicine, Rocky Mountain Center for Occupational and Environmental Health at the University of Utah. Dr. Larson has over 35 years of experience, 14 of which he spent working full-time in industry with a major petro-chemical company as an IH Program Director and a lead industrial hygienist. He has an MS in Civil Engineering and his PhD is in Toxicology. He teaches courses related to occupational and environmental health, industrial toxicology and the course Quantitative Risk Assessment. He directs research in areas related to monitoring for chemical, physical and biological contaminants, application of engineering controls, and use of personal protective equipment. He is also recognized as an IH Fellow in the American Industrial Hygiene Association (AIHA).

Andrew Merryweather, PhD

Dr. Merryweather is an Assistant Professor in the Department of Mechanical Engineering where he teaches and directs research in the areas of ergonomics, occupational biomechanics, and 3D motion analysis. He also serves in the capacity of manager of the Ergonomics and Safety Laboratory. Dr. Merryweather obtained his PhD degree in Mechanical Engineering at the University of Utah where he studied as an Occupational Injury Prevention Research Trainee (OIPRT) with emphasis on ergonomics, biomechanics and safety. He received an M.S. in Mechanical Engineering from the University of Utah, and a B.S. in Mechanical Engineering from Utah State University. Dr. Merryweather is a registered member of the American Society of Safety Engineers and the American Society of Biomechanics. He has worked as a safety and ergonomic consultant to private industry and is involved with research investigating musculoskeletal injuries in the workplace.

Leon Pahler, PhD, MPH, CIH

Dr. Pahler is a Research Assistant Professor at the Rocky Mountain Center for

Occupational and Environmental Health at the University of Utah. He began his career with the University in June 2005 and his area of emphasis is management of hazardous substances and organic chemistry. He has 3 years of experience as a faculty/post-doctorate teacher and researcher at Oklahoma State University. Dr. Pahler also has 19 years of petroleum and natural gas industrial experience with 16 years being in the petroleum/mining industry (UNOCAL, Parachute, Colorado). He teaches Advanced Industrial Hygiene and hazardous substance management courses at the Center.

Darrah Sleeth, PhD, MPH, CIH

Darrah Sleeth is an Assistant Professor at the Rocky Mountain Center for Occupational and Environmental Health. She is a Course Director for the Fundamentals of Industrial Hygiene course. She received a Master of Public Health (Industrial Hygiene/Hazardous Substances) in 2005 and a PhD (Industrial Health) in 2009 from the University of Michigan and began her career at the University of Utah in early 2010. Her dissertation measured the inhalability of airborne particles at ultra-low wind speeds and involved the design and development of a novel low-speed wind tunnel. Her research interests include particle size-selective sampling methodologies, exposure assessment for inhalation hazards, and indoor air quality. She is a member of the Aerosol Technology Committee of the American Industrial Hygiene Association (AIHA) and is active in international standards setting for workplace air quality. Dr. Sleeth has recently received a NIOSH grant to continue her research on evaluation of methods for monitoring aerosols.

Matthew S. Thiese, PhD, MSPH

Dr. Thiese is Assistant Professor in the Department of Family and Preventive Medicine. He is the Course Director for the required core course, Occupational Epidemiology. Dr. Thiese is currently engaged in multiple research projects at the Rocky Mountain Center and leads the Research Team. These projects include the cohort studies on upper extremity musculoskeletal disorders, low back pain, a study on risk of crashes among truck drivers and he currently analyzed data for the Police Officers and Firefighter's Health Study. He completed his Master of Public Health degree with a thesis on musculoskeletal injuries in home healthcare workers. His PhD in Public Health is in Occupational Injury Prevention with his dissertation addressing the relationship between measurements of physical exertion and the development of low back pain. His currently funded research project is analyzing risks of truck crashes and fatalities in a population of over 100,000 drivers.

Eric Wood, MD, MPH

Dr. Wood is the Deputy Director for the Rocky Mountain Center for Occupational and Environmental Health, and the Occupational Medicine Program Director, including directing the Occupational Medicine Residency Program. He is Assistant Professor in the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH). He is a graduate of the University of Utah School of Medicine, and he completed his Masters of Public Health (Industrial Hygiene) at the University of Hawaii. He completed residency training in Family Medicine at the University of Nevada, Reno, and Occupational and Environmental Medicine at the University of Utah. He is dual-board certified in Preventive Medicine (Occupational and Environmental Medicine) and Family Medicine. Prior to joining the faculty at the University of Utah he worked as an Attending Physician for Intermountain Healthcare, and as a Professional Industrial Hygienist for both private consulting, and for Utah (state) OSHA. Dr. Wood is actively involved as a researcher on two large scale prospective cohort studies investigating causes of musculoskeletal disorders. He was appointed as the inaugural Medical Fellow for the Federal Motor Carrier

Safety Administration and is performing research on health concerns of truck drivers. He also maintains research interests in respiratory protection and air pollution. His interests include occupational injury and illness management and prevention, and occupational and environmental exposure assessment and evaluation. Dr. Wood teaches several courses in the OEH curriculum, and he mentors occupational medicine residents and graduate students.

EDUCATIONAL OBJECTIVES OF THE OEH DEGREE PROGRAMS

The OEH degree programs have detailed programmatic educational objectives for each type of degree (MOH, MSOH, and PhD in OEH). These degree programs are overseen by the RMCOEH. Dr. Handy is the Program Director of the Graduate Programs in Occupational and Environmental Health, which are housed primarily in the Division of Occupational and Environmental Health in the Department of Family & Preventive Medicine (DFPM) in the School of Medicine at the University of Utah. These programs also have major components in, and collaborative relationships with the University of Utah's Department of Mechanical Engineering. This hierarchy introduces many levels of educational objectives. It also translates into a constant, multi-faceted evaluation of the program's success and its ability to attain the desired outcomes. Below are the mission and vision statements and the related educational goals and objectives. The process for establishing and updating these goals and objectives is also presented here.

Mission and Vision Statements

University of Utah

Mission: The mission of the University of Utah is to serve the people of Utah and the world through the discovery, creation and application of knowledge; through the dissemination of knowledge by teaching, publication, artistic presentation and technology transfer; and through community engagement. As a preeminent, Tier I research and teaching university with national and global reach, the University cultivates an academic environment in which the highest standards of intellectual integrity and scholarship are practiced. Students at the University learn from and collaborate with faculty who are at the forefront of their disciplines. The University faculty and staff are committed to helping students excel. We zealously preserve academic freedom, promote diversity and equal opportunity, and respect individual beliefs. We advance rigorous interdisciplinary inquiry, international involvement, and social responsibility.

School of Medicine

Mission: The School of Medicine has three major missions: **education, research, and clinical service**. The three missions are closely interrelated. Each supports and, in turn, benefits from the others. All are considered to be of equal importance.

Department of Family and Preventive Medicine

Mission: To address current and emerging healthcare needs by educating healthcare professionals, conducting basic and applied research, and implementing state-of-the-art clinical and community-based health services.

Vision: To protect and improve the health of all individuals and communities by advancing the science and practice of primary care and prevention.

Rocky Mountain Center for Occupational and Environmental Health

Mission: To protect workers and the environment through interdisciplinary education, research and service.

Vision: To be the leading national and international center in meeting current and future occupational and environmental health and safety challenges.

Occupational Medicine (OM) Program

Mission: The mission of the Occupational Medicine Residency (OMR) is to provide residents interdisciplinary education and experiential programs that will enable graduates to enhance health, improve safety, and increase productivity of workers, their families, and other populations.

Vision: To be the world's leading Occupational Medicine Residency training program.

Industrial Hygiene (IH) Program

Mission: The mission of the Industrial Hygiene Program is to provide Graduate Students with the education and experience that will enable them to protect and enhance the health and safety of workers, their families, and other populations.

Vision: To be the world's best graduate level industrial hygiene training program.

MSOH/MOH/PhD Admissions Criteria

Master of Occupational Health (MOH)

The purpose of the MOH Program is to train occupational health professionals interested in a career in one of the fields of occupational health or research. The degree requirements include coursework in occupational epidemiology, biostatistics, management, ergonomics, industrial hygiene, toxicology, administration and management. It also requires successful completion of a final, comprehensive examination. It is possible to complete the MOH Degree Program in 1 year. This degree is appropriate for those who possess an MD, DO, DVM, DDS or PhD degree ("terminal degrees") who are seeking a career in occupational health, or those exceptional individuals with a bachelor's degree and extensive work experience in occupational health, who seek to further their career in occupational health.

Students without terminal degrees must have at least a bachelor's degree from an accredited college or university, must have attained an overall "B" average, and must have significant experience in occupational safety and health. Also required is a course in college algebra or its equivalent, with a grade of "B" or better and acceptable performance on the General Test of the Graduate Record Examination (GRE). A course in statistics is desirable, but not required. Students without terminal degrees must take the General Test of the Graduate Record Examination (GRE), which is offered three times a year and on computer by appointment. Performance on that examination is an important indicator of a student's ability to be successful in graduate study. [On the GRE registration form, the Score Report Recipient box should be completed as follows: R4853 (for the University of Utah). International student applicants must also take the GRE and the TOEFL.] More information on the GRE can be found at:

http://www.ets.org/portal/site/ets/menuitem.fab2360b1645a1de9b3a0779f1751509/?vgn_extoid=b195e3b5f64f4010VgnVCM1000022f95190RCRD

Master of Science in Occupational Health (MSOH)

The purpose of the MSOH Program is to train occupational health professionals who are either interested in using the degree as a terminal degree or for those interested in further pursuit of research, or subsequent doctoral degrees in occupational health. There are six emphases: 1) Industrial Hygiene, 2) Hazardous Substances Academic Training (a subset of the Industrial Hygiene Program), 3) Ergonomics, 4) Safety, 5) Occupational Injury Prevention and 6) General OEH. The degree requirements are similar to that of the MOH Program and include coursework in occupational epidemiology, biostatistics, ergonomics, industrial hygiene, toxicology, administration and management. In addition to a final comprehensive examination, it also requires a practice experience in an occupational health setting (Practicum). Also, unlike the MOH Degree, the MSOH Degree requires a research-based master's thesis or project. It is possible to complete this degree program in 1.5 years but usually requires 2 years. A qualified applicant must have at least a bachelor's degree, preferably in an area related to science (e.g., chemistry, biology, physics) from an accredited college or university and must have attained a minimum of an overall "B" average (3.0 GPA in a 4.0 GPA maximum score system). Also required is a course in college algebra or its equivalent, with a grade of "B" or better and acceptable performance on the Quantitative, Verbal and Written tests of the Graduate Record Examination (GRE). A course in statistics is recommended, but not required. Students without terminal degrees must take the Graduate Record Examination (GRE), which is offered three times a year and on computer by appointment. Performance on that examination is an important indicator of a student's ability to be successful in graduate study. [On the GRE registration form, the Score Report Recipient box should be completed as follows: R4853 (for the University of Utah). International student applicants must also take the GRE and the TOEFL.] More information on the GRE can be found at: http://www.ets.org/portal/site/ets/menuitem.fab2360b1645a1de9b3a0779f1751509/?vgn_extoid=b195e3b5f64f4010VgnVCM1000022f95190RCRD

Doctor of Philosophy (PhD) in Occupational and Environmental Health (OEH)

The purpose of the PhD Program is to train occupational health professionals interested in pursuing careers as faculty in OEH or as highly trained professionals placed in prominent businesses, insurers and government positions that require doctoral level skills. The three emphases are: 1) Industrial Hygiene, 2) Occupational Injury Prevention Research Training (OIPRT) and 3) General Occupational and Environmental Health.

Students in the PhD in OEH Program will typically have completed masters training in occupational and environmental health, public health or another relevant master's degree (MSOH, MS, or MSPH). Occasionally, exceptional students may matriculate with extensive, sciences and math-based baccalaureate backgrounds and outstanding Graduate Record Examinations (GRE) scores. Typical Industrial Hygiene students will have backgrounds in chemistry or biology or physics. Application materials will be screened for suitability for doctoral work by the OEH Program's Admissions Committee. These materials will include the curriculum vitae, GRE scores, transcripts, reference letters, personal statement and where applicable, writing samples. Prospective student's projected dissertation topic and suitability will be evaluated during the application process. The Doctoral Admissions Committee will screen applications for preliminary suitability for consideration to extend an interview. All prospective students will also be interviewed by the Doctoral Admissions Committee. A faculty member must be identified to mentor and supervise the student, prior to being extended an offer of admission. Faculty consensus is required prior to admission.

Graduate Certificate of Occupational Safety and Health (COSH)

The purpose of the Graduate Certificate of Occupational Safety and Health (COSH) is to help meet graduate-level regional and national needs for personnel trained in various areas related to Occupational Safety and Health (OSH). The COSH will require students to complete at least 15 credit hours of graduate level coursework in OSH. Students will elect to participate in one of the following options:

- COSH with emphasis in Ergonomics and Safety (E&S)
- COSH with emphasis in Industrial Hygiene (IH)
- COSH without emphasis (General OSH, (G))
- COSH with emphasis in Occupational Health (OH)

Students in the Graduate Certificate of Occupational Safety and Health (COSH) Program will typically have completed a baccalaureate and are seeking to develop additional competency in OSH. Many of these students will already have jobs with OSH responsibilities and will be seeking improved knowledge and skills to better perform or advance in their careers. Some of the COSH students will likely continue to masters or doctoral studies in OSH. Besides those students working in industrial hygiene, ergonomics or related fields, the COSH will be of interest and value to physicians and nurses working in occupational health. This certification (COSH) is designed to meet the academic requirements for physicians working in OSH who seek board certification in Preventive Medicine with a specialty in Occupational Medicine through the American Board of Preventive Medicine's complementary pathway.

Typical COSH students will have undergraduate degrees in chemistry or biology or physics, with work backgrounds in areas related to occupational health and safety. Application materials will be screened for suitability for graduate work by the OEH Program's Admissions Committee. These materials may include the GRE scores, transcripts, and reference letters.

Application/Admissions Criteria for the OEH Programs

Office of Admissions' decisions are based on an evaluation of the individuals' application:

1. The U of U application and transcripts are submitted by computer directly to the Admissions office via the Apply Yourself (AY) program
2. Background in occupational health, or environmental health, or other related sciences (eq. biology, chemistry, physics, etc.) related field, engineering (particularly for ergonomics and safety) including the candidate's prior field of study and work experience
3. Undergraduate and graduate grades – at least a cumulative 3.0 GPA in a 4.0 GPA system is required
4. GRE scores – Quantitative, Verbal, Written sections Master's: GRE scores within past 5 years (except for those with a prior U.S. doctoral degree);
5. TOEFL scores for international students
6. Three letters of reference
7. Goal statement – Not to exceed 500 words
8. Personal interview after application is approved for consideration to matriculate, including international applicants to accommodate applicants who come from a significant distance. Personal interviews can be arranged at a mutually convenient time. Telephone interviews may be conducted and are considered on a case-by-

case basis

The OEH Program admits students primarily for Fall semester each year, although some students may be admitted Spring and Summer semester. The deadline for Fall admission is **April 1**. Applicants that do not complete their file prior to the deadline can apply later but will be required to pay a late fee to the U of Utah Office of Admissions.

General Requirements for MSOH/MOH Degrees

Progress and Evaluation

Certain general policies with respect to advising and periodic evaluation of student progress apply to all students in the OEH Programs. All students have an academic advisor assigned to guide the student in their academic program. Students should meet with their Advisor early in the beginning of the first semester, or prior to first semester when possible, to outline their coursework and review their academic goals.

Students should also meet frequently with their Advisor each Fall and Spring semester to review progress and goals. It is the student's responsibility to meet with their Advisor on a regular basis.

Students are not compelled to retain their initial Advisor(s). There is no obligation to include them on the students' Supervisory Committee. When a formal Supervisory Committee is formed, the Chair of the Committee becomes the student's Advisor. Also, students should feel free to discuss issues of interest with other faculty members, within and outside of the OEH Programs, who may be of help or who are interested in a particular subject.

Students must read, sign the applicable form, and adhere to the rules of the Graduate Student Conduct and Dismissal Policy (see Appendix A). Students that violate the rules of conduct are subject to dismissal from their program, the department, or even the University.

We are pleased that students may receive some funding from the generosity of external sources (e.g., NIOSH, HRSA), and there may be additional requirements or limitations based on the funding source. Students should consult with their Advisor at all times, but particularly when seeking to alter a curricular plan as students should be aware of possible external requirements. In addition, there are numerous opportunities for hands-on experience through the Practicum (see Appendix B).

Quality scientific writing is a ***critically*** important skill for successful OSH professionals. The OEH Programs have developed detailed guidelines for scientific writing the student should be familiar with and follow at all times unless a course instructor provides other instructions (see Appendix C). The programs also provide guidance for writing scientific papers that should be used throughout the curriculum (see Appendix D).

Supervisory Committee

All students, MSOH or MOH, are required to form a Supervisory Committee that will supervise the student's academic program.

A Supervisory Committee is a critical component of each student's graduate study in

occupational health as it is responsible for: i) approving the student's academic program; ii) preparing and serving as the primary judge of the qualifying examinations subject to departmental policy; iii) approving the thesis or dissertation subject; iv) reading and approving the thesis or dissertation; and v) administering and judging the final oral examination (thesis or dissertation defense). The Chair of the Supervisory Committee mentors the student's research and writing of the thesis or dissertation. MSOH students will be required to make a pre-defense of their research, but only with their Supervisory Committee present. This will typically be at least 10 days before the final oral examination, which may be chaired by any member of the Supervisory Committee consistent with departmental policy. It is also important to note that the date, time and location of the final defense needs to be publicly posted at least 7 days prior to the defense. If a graduate student's preliminary work is deficient, the Supervisory Committee may require supplementary undergraduate courses for which no graduate credit is granted. Decisions concerning program requirements, examinations, and the thesis or dissertation are made by majority vote of the Supervisory Committee.

For MOH students, the Supervisory Committee's role is to monitor the general academic progress of the student, ensuring that the student fulfills the requirements of the degree, selects appropriate electives, and provides general career counseling.

For MSOH students, the Supervisory Committee's role also includes assisting with choosing an appropriate Practicum experience, and advising and supervising the student's thesis or project. For all students pursuing the MOH or MSOH degree, three Committee members are necessary. At least two of the members must be faculty of the OEH Programs.

The Supervisory Committee requirements for the PhD Program are discussed later in this document (see section: PhD Course Requirements).

One member of the Supervisory Committee may be from outside the program, but must hold a minimum of a master's degree and must have expertise specific to the research topic. A written request, to include a 1-page justification and CV must be approved by the OEH Program Director. All Committee members must be approved in writing by the OEH Program and the OEH Program Director. It is the responsibility of the student to approach prospective Committee members with a view to their willingness and availability to serve in such a capacity. Students should discuss their proposed Committee membership with the academic advisor and other faculty. A goal is to have *different* types of relevant expertise brought to bear when forming a broad Committee for the student to engage and from which to further learning. The faculty has the right, for justifiable academic reasons, to refuse to serve on a student's Supervisory Committee.

Supervisory Committees are generally formed in the first or second full semester for master's students. The student is responsible for completing the Request for Supervisory Form, having each member sign, and turn in the form to the OEH Program office to formally establish a Supervisory Committee. Please refer to the Graduate School for further information on Supervisory Committees.

Minimum Grades

Candidates for graduate degrees at the University of Utah are required to maintain a 3.0 or higher GPA in course work counted toward the degree. In addition, a grade below *B-* is not accepted for core class credit toward any graduate degree offered through the Rocky

Mountain Center for Occupational and Environmental Health.

A final grade in a MSOH/MOH course below a B- is considered an unacceptable grade in the program. An unacceptable grade in a core course means the student has not demonstrated competence in a discipline necessary for success within the Program. For these reasons, the following action will be taken:

1. Students who receive a grade lower than a B- in a core course are on probation. The student will be notified in writing that he or she is on departmental probation.
2. These students will be allowed to retake the class 1 more time and they must earn a B- or higher grade in the course or they will be automatically dismissed from the program.
3. A student who receives a grade of below B- in a core course will be permitted to take other program courses for which this core course is not a prerequisite. Students will not be permitted to accrue more than 15 hours before retaking the core course.
4. A student who earns a grade below B- in 2 core courses will not be permitted to enroll in any further courses until he or she has retaken both courses and receives grades of B- or better.
5. If a student receives an unacceptable grade in three or more core courses, he or she will be automatically dismissed from the program.
6. Two grades lower than a B- in elective courses will also be a consideration for dismissal.

Actions arising from this policy may be appealed by the student using the appeals process outlined by the University of Utah – Appeals of Grades and Other Academic Actions.

<http://regulations.utah.edu/academics/6-400.php>

Credit/No-Credit Policy

The intent of the *CR/NC* option is to free students to extend their studies to areas outside their major or specialty and to take classes they otherwise may not have taken if they had to compete with majors for a letter grade. However, as many OEH Programs' students are funded by external sources (e.g., grants), students must check with their Advisor as *CR/NC* courses are potentially unable to be paid by those external sources.

The following applies to taking classes *CR/NC*:

1. During the first year in graduate school at the University of Utah, the student, if the department concurs, may register for one class each semester on a *CR/NC* basis.
2. Of the first year's work, courses taken for *CR/NC* grades may not exceed approximately 25% of the student's total credits and generally should be less than 25%. In some cases, especially if the student plans to do doctoral work, the Director of Graduate Studies or Chair of the student's Supervisory Committee may determine it is desirable that all classes be taken for letter grades the first year. If so, the program should be outlined accordingly.
3. After the first year in The Graduate School, the student may request permission from the Director of Graduate OEH studies to register for more than one class per semester on a *CR/NC* basis.
4. Students may not elect to register for *CR/NC* courses for core OEH

- Program courses unless a course is offered *only* on a *CR/NC* basis.
5. All courses earning credit of 1 hour are graded on a *CR/NC* basis, unless use of regular letter grades is approved by the Graduate Council.
 6. Students should earn a grade of *C* or better to be entitled to credit. Students who do not wish to register for credit, either for a letter grade or *CR/NC*, should audit the course.
 7. Students enrolled in a class for *CR/NC* may change to a letter grade any time before the Monday of the last week of classes. Graduate students are cautioned that it is important they receive letter grades in order to build a graduate GPA. This is especially important if students apply for fellowships or traineeships on a competitive basis or later transfer to another institution.
 8. All Master Thesis, Master Project, and Dissertation hours will be offered as either *CR/NC* or *letter grade*.

Petition for Graduate Credit

OEH Program students may be allowed to select certain graduate-level courses (5000 level and above) taken while enrolled as an undergraduate student for graduate credit. Such graduate credit is limited to 6 semester hours or two courses. Credit used to earn the undergraduate degree may not be counted toward a graduate degree. Students are encouraged to seek advance approval from the OEH Program Director and the Dean of the Graduate School on an ***Undergraduate Petition for Graduate Credit*** form, available in the Registrar's Office and on the Graduate School webpage under "Online Forms." However, if a student seeks retroactive graduate credit for courses taken as an undergraduate, permission may be granted only if a grade of B or better was earned in the specified courses and if the courses were taken no more than 3 years prior to the petition.

Transfer of Credit

Graduate credit may be transferred from other institutions. Similar core and required graduate-level courses taken at other colleges and universities will be reviewed on a course by course basis. OEH Program faculty teaching similar courses will review the syllabus, and potentially other course materials, from the other institution to determine if the course is acceptable as a transfer course. Both the Instructor and the OEH Program Director must approve the course substitution. In the case where the student is in a NIOSH funded program and receiving NIOSH funding, the Program Director (e.g., Occupational Medicine) must also approve. Credits transferred from another institution may be used for only one University of Utah degree. Up to 6 semester hours of transfer credit may be applied toward fulfillment of graduate degree requirements if they 1) are of high letter grade (*A* or *B*; credit only grades are unacceptable), 2) are recommended by the student's Academic Advisory and the OEH Program Director and 3) are taken within the prescribed time limit.

Maximum Hours

A schedule of 9 credit hours is considered a full load for master's degree candidates. No candidate for a graduate degree is permitted to register for more than 16 credit hours in any single semester. Candidates electing to register for 17 credit hours or more must file a formal petition to the Dean of Graduate Studies. This petition must include:

1. A completed petition form
2. Two letters of support from their Committee members
3. An approval letter from the Program Director

Limitations on Credit

Credit earned by non-matriculated students may apply to a graduate degree program, but it must be approved by the Director of the OEH Program. Non-matriculated credit that can be applied toward a graduate degree is limited to 9 semester hours. Applying more than 9 hours of non-matriculated work to the degree requires approval of the Dean of The Graduate School.

Course Numbers

Courses numbered 6000 and above are considered graduate-level. Courses numbered 5000 to 5999 can count toward graduate degrees. Courses numbered 3000 to 4999 are upper-division (junior and senior) courses. Those numbered 1000 to 2999 are lower division (freshman and sophomore) courses.

Scholarly Integrity

Scholarly integrity is taken very seriously at the University of Utah, as well as in the OEH Programs, and academic misconduct of any nature will not be tolerated. All students are expected to “adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating (The Code of Student Rights and Responsibilities).” Such violations are subject to disciplinary action, up to and including expulsion. Please refer to the student code for details on disciplinary action and appeals processes at <http://www.admin.utah.edu/ppmanual/8/8-10.html>.

Time in Program/Credits per Semester

Minimum Continuous Registration

All graduate students must maintain minimum registration from the time of formal admission through completion of all requirements for the degree they are seeking *unless granted an official leave of absence* (see Leaves of Absence, below). Students not on campus and not using University facilities are not expected to register for Summer semester. If students do not comply with this continuous registration policy and do not obtain an official leave of absence, their Supervisory Committee is terminated and their records are inactivated. To reactivate a file at a later time, the student is required to reapply for admission to The Graduate School.

Master's Degrees

Master's degree students in a program requiring a thesis, required to be formatted according to the University of Utah Graduate School thesis requirements, need to maintain minimum registration by:

1. Registering and paying applicable tuition and fees per semester during the academic year from the time they are admitted to the Graduate School until they have completed all requirements for the degree. Students are required to take 6 thesis/dissertation research hours (Thesis Research, course number 6911, may be used to fulfill this requirement; up to 10 hours of course number 6911 may be counted toward the master's degree); or
2. Registering for 3 credit hours of Faculty Consultation (course number 6985) during any semester in which they are not otherwise enrolled.

*Students must be enrolled for at least 1 credit hour of thesis/dissertation research during the semester they defend their thesis/dissertation or risk paying tuition for every semester that follows until the graduation process is complete. See the section, Number of Credits Required per Semester, for further direction.

Master's degree students in a non-thesis (project) program, which requires submittal of a manuscript describing their research to a peer-reviewed journal formatted per that journal's format requirements, need to maintain minimum registration by:

1. Registering and paying applicable tuition and fees for at least 3 credit hours (Project Research, course number 6910, may be used to fulfill this requirement) per semester during the academic year from the time they are admitted to The Graduate School until they have completed all requirements for the degree, including the submission of a final paper or project; or
2. Registering for 3 credit hours of Faculty Consultation (course number 6985) during any semester in which they are not otherwise enrolled.

Minimum continuous registration requirements apply to thesis candidates until the thesis is successfully defended. Students who take their last examination after the final examination period and before the next semester begins are not required to register for the next semester. They will graduate the semester all Graduate School requirements are fulfilled. Master's thesis candidates do not have to register after they have defended their theses. The requirements apply to non-thesis candidates until the final paper or project is submitted and approved by the department. Master's degree students maintaining minimum continuous registration have library privileges, health insurance options, and access to athletic facilities.

Termination of Committee

If students do not comply with the continuous registration policy described above and do not obtain an official leave of absence, their Supervisory Committees are terminated and their records are inactivated. To reactivate a file at a later time, the student must reapply for admission to The Graduate School.

Leaves of Absence

Students who wish to discontinue their studies for one or more semesters (other than Summer semester) must file a *Request for Leave of Absence* form with the Chair of their Supervisory Committee. Before being forwarded to the Graduate Records Office for approval by the Dean of The Graduate School, the form must be approved by the Supervisory Committee Chair and Department Chair. Requests may be granted in the following circumstances:

1. Leaves of absence generally are granted and reviewed on a yearly basis for reasons relating to illness, military service, pregnancy and/or child care, residence outside the state of Utah, and work in process in which students are not in continual contact with their Supervisory Committee or other members of the faculty.
2. Leaves also may be granted on a yearly basis to students who, in the judgment of their department Chair, are engaged in work considered beneficial to their academic goals, such as temporary teaching or professional employment that allows the student ultimately to complete the

- degree.
3. Leaves for other reasons may be granted and reviewed on a yearly basis when the student's Chair believes the leave is in the best interest of both the student and the University.

Students must apply for leaves of absence for a current semester by the last day of classes of that semester. They also must *officially* withdraw from classes in any semester for which a leave is granted. Failure to withdraw formally results in the reporting of *E* or *EU* grades for all classes. For more information about official withdrawal, see Grading Policies in the Undergraduate Information section of this catalog. The period during which a leave of absence is granted does not count toward the period allowed to complete the degree. Leaves are granted for a maximum of 1 academic year at a time. The leave of absence is void if a student registers for classes in a semester for which a leave was granted.

Summer Term Registration

Continuous registration refers only to registration during the regular academic year and is not terminated or interrupted by non-registration during Summer semester. Students should, however, maintain registration status during Summer semester if they are taking examinations and/or seeking credit for a Practicum.

Charges

Nonresident tuition is not imposed on students whose total registration includes only course numbers in the range 6911 to 6985 or 7970 to 7980 (Thesis Research, Faculty Consultation, and Final Project) in a given semester. Continuing Registration (course number 7990), available only to doctoral students who have been admitted to candidacy, carries a charge (subject to change without notice) of \$37.50 per semester, regardless of resident status.

Full-time Status

Graduates considered full time:

1. Are registered for 9 or more credit hours;
2. After the residency requirement has been met (two consecutive semesters of 9 hours or more), are registered for 3 credit hours of one of the following: 6911- 6985, 7970, or 7980. *Option 2 does not fulfill state residency requirements.*

Number of Credits Required per Semester

A minimum of three credit hours is typically required to maintain active status in a graduate program (except Summer semester). However, a student that has completed all of the course requirements for a degree program but still needs to complete a minimum amount of additional work to finish a thesis or dissertation may be approved to take only 1 or 2 credit hours for the last semester. The amount of credit hours required for the student to register for in their last semester is based on review and approval of the Chair of the student's research committee and the Director of their program. If a student does not fill out a Leave of Absence form for a semester in which they are not registered for any credit hours they will be discontinued from the program.

In-class Participation

Many OEH classes require active participation to learn and master the graduate-level material. Taking notes on a computer is generally acceptable if not encouraged. Surfing on-line and other computer use in lieu of class participation is not allowed. Some courses prohibit use of computers in classes. Students must observe the requirements of each course and be aware that some course instructors may impose penalties, such as confiscating the laptop or other online device used for other than course purposes for periods up to a day after the course.

MSOH/MOH Degrees

Master Requirements MSOH/MOH

- Practicum (MSOH only). Prior to commencing, submit form outlining objectives, signed and approved by Advisor and mentor. The forms may be obtained from the Academic Coordinator's office. The signed forms need to be turned into the Academic Coordinator prior to starting Practicum.
- Submit original Supervisory Committee Form (students must approach Supervisory Committee to request signatures) to Academic Coordinator. Forms must be completed within the first year. Please use the following website to begin to assemble the Supervisory Committee <http://gradschool.utah.edu/graduate-catalog/degree-requirements/>
- Comprehensive (Summative) Examination. This examination is held in April and December. Students must check with their Program Director for the exact dates.
- Final Examination/Project Form: MSOH/MOH Final Defense or Project. Forms may be obtained from the Academic Coordinator. The forms need to be signed by Committee members and turned into the Academic Coordinator.
- **Applying for Graduation (this is the semester that the student will be completely finished with their degree requirements including thesis and project research releases).**

Forms to apply for graduation are available from the Office of the Registrar at <http://registrar.utah.edu/handbook/graduategraduation.php>

This form is to be filed out completely and given to the Academic Coordinator 6 months prior to graduation.

MOH/MSOH Programs

MOH Course Requirements

Credits

A candidate for the MOH degree must complete 32 credit hours of coursework. Students may also enroll in elective courses within FPMD or in other relevant departments. Students may also enroll in independent studies with an OEH faculty member. Relevant elective coursework that is 5000-level or above may count towards the total; however, all elective coursework the student desires to count towards fulfilling the degree requirements that is outside of the OEH Program must be approved by the Advisor or Supervisory Committee. Coursework unrelated to occupational health and at the 4000-level or below will not count.

Waivers and Substitutions

Waivers and substitutions for core courses are rarely allowed. However, they may be granted with the combined approvals of the student's Advisor, the course instructor, and the Program Director.

Summative Course

The Occupational Health and Safety Solutions course (FPMD 6715) is a capstone and the summative course for all OEH Programs students. The comprehensive examination is the comprehensive assessment for the OEH Programs.

Together, these two experiences have the following purposes:

1. First, to ascertain if the student has both the broad and specific knowledge expected of someone holding a master's degree in occupational health and has met the core competencies of the OEH Program.
2. Second, to determine whether the student has been able to integrate knowledge obtained from individual courses into unified concepts that link the student's own interests to the other areas of occupational health.
3. Third, to determine if this knowledge can be translated into solving occupational health problems.
4. Fourth, prepare the student for future qualification and certification examinations for their chosen occupational health field.

The Occupational Health and Safety Solutions course is only offered in the Spring semester. As it is an integrative and summative course, nearly all course work should either have been previously completed or taken during the semester when this course is taken.

Comprehensive Examination

Comprehensive examinations are offered in December and April and are required of all students. The student may sit for the examination once he or she has completed and passed all core courses in their specific emphasis area (e.g., Industrial Hygiene, Industrial Hygiene-Hazardous Substance Academic Training, and Occupational Medicine). The examination is written (multiple-choice) and has two parts: a core component and a discipline-specific component.

The core examination component consists solely of multiple choice questions covering the core material (i.e., occupational epidemiology, biostatistics, and management/administration), as well as select core material from industrial hygiene and ergonomics and safety. The second part of the comprehensive examination consists of questions tailored to the specific area of the student's emphasis (IH, HSAT, OM, Ergonomics, etc.). The specialty/ emphasis part of the examination contains both multiple choice and may contain essay questions.

For both components of the comprehensive examination, the multiple choice questions are typical of those on standardized examinations and are designed to assess the student's mastery of the occupational health curriculum. This examination experience is also specifically designed to help prepare students for future certification examination(s), which we also hope they will successfully pass.

If the student fails the exam the first time, they can retake the exam a second time, usually the next time it is offered. However, if they fail the comprehensive exam a second time they will be automatically dismissed from the program with no degree issued.

To see the MOH – Occupational Medicine (OM) emphasis course requirements please review Tables 1 and Tables 2.

Table 1
Fall Courses for the MOH – Occupational Medicine Emphasis

Course	Title	Credits
FP MD 6100	Biostatistics I	3
	Biostatistics Laboratory	
FP MD 6370	Occupational Epidemiology	3
	Occupational Epidemiology Laboratory	
FP MD 6703	Clinical and Behavioral Aspects of Occupational Injuries and Diseases	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6760	Administration and Management of Health and Safety Programs	3
	Ergonomics Laboratory	
FP MD 6702	Advanced Topics in Occupational and Environmental Health I	2
	TOTAL	16

Table 2
Spring Courses for the MOH – Occupational Medicine Emphasis

Course	Title	Credits
FP MD 6761	Ergonomics	3
FP MD 6504	Clinical and Behavioral Aspects of Preventive Medicine	3
FP MD 6752	Introduction to Industrial and Environmental Toxicology and Physiology	3
FP MD 6715	Occupational Health and Safety Solutions	3
FP MD 6702	Advanced Topics in Occupational and Environmental Health II	2
FP MD 6910	Project Research	2
	TOTAL	16

MOH-OM Total Credit Hours: 32

Note: Residents in Aerospace Medicine are required to take the 5 credit hours course FPMD 6706 Studies in Aerospace Medicine

MSOH Course Requirements

Credits

A candidate for the MSOH degree must complete at least 42 credit hours of coursework. Of these, 36 to 37 credit hours are for required courses, including 3 credit hours for a Practicum (240 field hours) for the required Practicum, at least 5 to 6 credit hours are for approved elective courses, and 6 credit hours are for the master's thesis or project.

Coursework

Courses required for the MSOH degree are outlined in the following tables and vary by emphasis area of occupational health study.

Students may enroll in elective courses within FPMD or in other relevant departments. Students may also enroll in independent studies with an OEH faculty member. Relevant elective coursework that is 5000-level or above may count towards the total; however, all elective coursework outside of the OEH Program must be approved by the Advisor or Supervisory Committee. Coursework unrelated to occupational health and at the 4000-level or below will not count.

Waivers and Substitutions

Waivers and substitutions for core courses are rarely allowed. They may be granted only with the combined approvals of the student's Advisor, the course instructor, and the Program Director.

Summative Course and Comprehensive Examination

See the above two discussion sections in the MOH/MSOH Program pages above.

MSOH Degree Program's Industrial Hygiene Program Curriculum

The RMCOEH IH Program has detailed programmatic educational objectives. This program is an emphasis within the Masters of Science in Occupational Hygiene (MSOH) Degree Program. This degree program is overseen by the RMCOEH. Dr. Larson is also Director of the Industrial Hygiene Programs. The following is a description of core (required) courses and possible electives for each area of emphasis in IH.

For the curriculum plan and proposed time line for the industrial hygiene (IH) and hazardous substance academic training (HSAT) please review Table 3 through Table 6.

Table 3

MSOH – Industrial Hygiene: IH Emphasis Course Requirements

Course #	REQUIRED IH COURSES	Credit Hours	Semester Offered
FP MD 6100	Introduction to Biostatistics	3	Fall
FP MD 6370	Occupational Epidemiology	3	Fall
FP MD 6760	Administration and Management of Health and Safety Programs	3	Fall
FP MD 6750	Fundamentals of Industrial Hygiene	2	Fall
FP MD 6751	Advanced Industrial Hygiene	3	Spring
FP MD 6752	Introduction to Industrial and Environmental Toxicology and Physiology	3	Spring
FP MD 6753	Industrial Ventilation	2	Spring

FP MD 6754	Noise and Other Physical Agents	2	Spring
FP MD 6761	Ergonomics	3	Spring
FP MD 6715	Occupational Health and Safety Solutions	3	Spring
FP MD 6980	Occ. Health Practicum	3	Fall, Spring & Summer
FP MD 6910	Project Research – MSOH OR	6	Fall, Spring & Summer
FP MD 6911	Thesis Research – MSOH	6	Fall, Spring & Summer

Core Credits: 36

Electives Students Choice (see below) **6**

MSOH-IH Total Credit Hours: 42

**Table 4
IH Emphasis Elective Courses**

IH Electives (desired by Student):			
Course #	Course Title	Credit Hours	Semester Offered
FP MD 6756	Hazardous Substances	3	Fall
FP MD 6730	Quantitative Risk Assessment	3	Fall
ME EN 6110	Safety	3	Spring

**Table 5
MSOH – Hazardous Substance Academic Training: HSAT Emphasis Course Requirements**

Course #	REQUIRED IH COURSES	Credit Hours	Semester Offered
FP MD 6100	Introduction to Biostatistics	3	Fall
FP MD 6370	Occupational Epidemiology	3	Fall
FP MD 6760	Administration and Management of Health and Safety Programs	3	Fall
FP MD 6750	Fundamentals of Industrial Hygiene	2	Fall
FP MD 6751	Advanced Industrial Hygiene	3	Spring
FP MD 6752	Introduction to Industrial and Environmental Toxicology and Physiology	3	Spring
FP MD 6756	Hazardous Substances	3	Fall
FP MD 6730	Quantitative Risk Assessment	3	Fall

FP MD 6753	Industrial Ventilation	2	Spring
FP MD 6715	Occupational Health and Safety Solutions	3	Spring
FP MD 6980	Occ. Health Practicum	3	Fall, Spring & Summer
FP MD 6910	Project Research – MSOH OR	6	Fall, Spring & Summer
FP MD 6911	Thesis Research - MSOH	6	Fall, Spring & Summer

Core Credits: 37

Electives Students Choice (see below) 5

MSOH-HSAT Total Credit Hours: 42

**Table 6
IH-HSAT Emphasis Elective Courses**

IH-HSAT Electives (desired by Student):			
Course #	Course Title	Credit Hours	Semester Offered
FP MD 6754	Noise and Other Physical Agents	2	Spring
FP MD 6761	Ergonomics	3	Spring
ME EN 6110	Safety	3	Spring
FP MD 6758	Occupational Environmental Health Clinic	1	Fall, Spring, & Summer

To review the curriculum plan and proposed time line for the ergonomics and safety science emphasis please review Tables 7 and 8.

**Table 7
MSOH - Ergonomics Emphasis Course Requirements**

Course #	Course Title	Hrs	
FP MD 6761	Introduction to Ergonomics	3	Spring
FP MD 6370	Occupational Epidemiology	3	Fall
FP MD 6100	Introduction to Biostatistics	3	Fall
ME EN 6960-4	Work Physiology and Occupational Heat Stress	3	Summer Odd AY
ME EN 6120	Human Factors in Engineering Design (or 6130)	3	Fall Odd AY
ME EN 7100	Advanced Ergonomics	3	Spring Odd AY

FP MD 6760	Administration and Management of Health and Safety Programs	3	Fall
FP MD 6750	Fundamentals of Industrial Hygiene	2	Fall
FP MD 6311	Research Design	3	Fall
ME EN 6960	Occupational Health and Safety Solutions	3	Spring
	Electives	8	
FP MD 6910	Project Research – MSOH OR	6	Fall, Spring & Summer
FP MD 6911	Thesis Research - MSOH	6	Fall, Spring & Summer

MSOH-Ergonomics Total Credit Hours: 43

**Table 8
Safety Science Emphasis Course Electives**

Course #	Course Title	Hrs	
FP MD 6703	Occupational Injuries and Diseases	3	Fall
FP MD 6370	Occupational Epidemiology	3	Fall
FP MD 6607	Injury Surveillance	2	Spring
ME EN 6110	Introduction to Industrial Safety	3	Spring Odd AY
FP MD 6100	Introduction to Biostatistics	3	Fall
ME EN 7110	System Safety	3	Spring Even AY
FP MD 6760	Administration and Management of Health and Safety Programs	3	Fall
FP MD 6311	Research Design	3	Fall
ME EN 6960	Occupational Health and Safety Solutions	3	Spring
FP MD 7530	Design Implementation and Evaluation of Public Health Programs	3	Spring
	Electives	8	
FP MD 6910	Project Research – MSOH OR	6	Fall, Spring & Summer
FP MD 6911	Thesis Research - MSOH	6	Fall, Spring & Summer

MSOH-Safety Total Credit Hours: 43

MSOH Practicum

All MSOH students must complete 3 credit hours (at least 240 hours of fieldwork depending on course of study) of Practicum prior to graduation. The Practicum experience is meant to give students direct, hands-on experience comparable to a career position suitable for someone with an MSOH. This is intended to not only supplement the student's coursework and enrich their academic experience, but also prepare the student for employment after completion of their degree.

Objectives

The goals of the Practicum are:

1. To integrate foundational occupational health knowledge with a concrete experience of occupational health practice, usually of a specific discipline. In particular, to observe and report how the following concepts play out in a real occupational health practice: i) the core functions of occupational health, ii) the core organizational practices necessary for governmental agencies to carry out the mission of protecting the health of workers, and iii) the essential occupational health services, from an organization or community-based perspective.
2. To identify and report the issues in cultural competence relevant to a specific Practicum site and how they play out in real occupational health practice.
3. To identify growth edges in occupational health practice.
4. To broaden knowledge and skills in occupational health practice.

Practicum Settings

The placements for a Practicum should be representative of the kinds of settings where occupational health practice is conducted, especially targeting the field of study that the student intends for a career. This may include industries, occupational safety and health agencies, universities and colleges, labor organizations, trade organizations, local and state health departments, governmental agencies with jurisdiction or impacts on occupational health (CDC/NIOSH, OSHA, etc.), non-profit organizations with an occupational health mission (Center to Protect Worker Rights, etc.), and managed care and health maintenance organizations (Intermountain Healthcare, Blue Cross/Blue Shield).

Preparation for Practicum

Students should not begin Practicum work without at least one semester of academic work, with some knowledge of occupational epidemiology and biostatistics. A Practicum site should expect the students come prepared to contribute as well as learn. However, it is recommended for Practicum to be completed at the end of a student's first year of study.

Selecting a Practicum Placement

Whenever possible, students should seek out a Practicum opportunity on their own that matches their career and/or research interests. The Practicum site must be approved by the student's Advisor or the Chair of the Supervisory Committee or OEH Program Director. These Advisor(s) are best qualified to help the student determine if the proposed site is appropriate and proposed mentor for them during their Practicum is acceptable. The Practicum Course Director will also have a database of previous sites and will inform students of current opportunities. If a student selects their own Practicum site, they must contact the Practicum Course Director and their Advisor/Chair at least one semester prior to the Practicum so that it can be approved.

The placement should meet the following criteria:

1. Site/business should be closely related to the practice of occupational health, especially in the discipline of the student's primary focus (e.g., industrial hygiene, ergonomics, etc.).
2. The work experience available at the site must include hands-on experience with the regular work of the site, such as direct contact with the

- workers, patients, clients, or customers.
3. The site mentor must be qualified (e.g., experience and certification in IH or a related field) and available to supervise and evaluate the student's experience.
 4. A Practicum is generally distinct from a research opportunity, depending on the student's career goals.

*Practicum placements should be signed by the Practicum Course Director and the student's Advisor or Chair of the Supervisory Committee or OEH Program Director by the final Friday before classes end, usually at the middle of the student's 2nd semester.

Credits and Time Requirements

The time/credit ratio for Practicum credit is a minimum of 80 contact hours per 1 credit hour; therefore, students are expected to spend a minimum of 240 hours for 3 credit hours. This would equate to a little over 6 to 10 weeks of full time work. Or, if the Practicum is completed over the course of a semester, roughly 17 to 20 hours per week to achieve the minimum of 240 contact hours during the semester. If necessary, a research Practicum can exceed one semester; if this is the case, please contact the Practicum Course Director so that an incomplete grade can be posted. Students can choose how many credits they register for each semester. Please note that the University allows only 1 calendar year to complete an incomplete class; after 1 year, the grade is automatically changed to an E.

Requirements

Prior to beginning the Practicum and by April 15th, students must submit:

- Description of the Practicum site.
- Statement of students' Practicum goals and objectives, signed by the Practicum Course Director and the mentor.
- Practicum mentor credential form.

Upon or near completion of the Practicum (must be at least 1 week prior to end of the semester the practicum is conducted in for grading purposes), students must ensure the following are submitted:

- Mentor's evaluation of the student's performance, which the mentor submits directly to the Practicum Course Director.
- Student's evaluation of the Practicum experience.
- A minimum 5-page report on the Practicum experience and accomplishments, double spaced, 12-point font in either Arial or Times New Roman. Reports must not contain proprietary information, research results, or sensitive company information. For an outline, please refer to Appendix B.

A grade will be assigned for the Practicum by the Practicum Course Director based on the mentor's evaluation of the student's performance, the student Advisors suggested grade, and the 5-page report.

Report and Evaluation

A student's Practicum is evaluated by the student and the mentor, using forms developed by the OEH Program, in addition to a 5 + page report by the student on their experience (see Appendix C for scientific writing). Based on this information, the Practicum Course Director assigns a letter grade for the experience. The quality of the Practicum experience may also be tracked by selected periodic site visits by the OEH faculty.

*Practicum reports and evaluations are due 1 week before that semester's last day of classes.

MSOH Thesis/Project

As the Masters of Science degree is a research-oriented degree, all MSOH students are required to complete and successfully defend a thesis/project prior to graduating.

Students must:

1. Choose a project or thesis that coincides with their interests
2. Complete 6 credit hours of project/thesis (roughly 300 hours of effort)
3. Write a paper in the format of a traditional thesis or a paper of publishable quality
4. Present the thesis/project at a public seminar
5. Successfully defend the thesis/project

Thesis/Project Topic and Organization

The master's thesis/project may be based on research involving primary data collection, but is often a secondary analysis of existing data to investigate a research question not yet evaluated in that study. It can also be an investigation on novel methodological issues. The thesis/project is typically organized as a potentially publishable paper (see Appendices A and B). The decisions about acceptable thesis/project content and organization reside with each student's Supervisory Committee. There is a list of past theses/projects in the OEH Program.

Supervisory Committee and Concept Approval

Prior to developing a formal project/thesis proposal, a student must receive approval from the OEH Program Director for their Supervisory Committee and their master's project/thesis in concept form. Students will submit a copy of the completed 1-page concept paper of their proposed project/thesis to each member of the students *Supervisory Committee* and one copy to the OEH Program Director for their review. A formal review of the Supervisory Committee and project/thesis concept will be presented to the Faculty members by the Supervisory Committee Chair.

Members of the student's Supervisory Committee will vote on whether to approve the concept and allow the student to proceed to the formal proposal. Once the concept paper is approved, the student will then prepare a paper of up to 12 pages, and in accordance with the PHS-398 guidelines for writing project proposals as if preparing the proposal for submission to a government agency for funding. The information on their proposed project/thesis should describe the background, methods planned for use to conduct the study, the statistical methods expected to be used to evaluate the data collected, and their references. It is important to note that this document can and should serve as the basis for the student's thesis or manuscript, generally requiring only addition of the data, statistical results and conclusions when the research is completed.

Based on this documentation, the Committee will determine if the student is prepared to proceed to conduct the formal project/thesis and this document is to be approved by signature from the students Supervisory Committee prior to the student beginning his/her research project.

Thesis Format

The approval of the content of the thesis/project is an academic matter between you, the student, and the student's Committee. However, the form and distribution for the thesis and abstract, as well as the use of restricted data are determined by The Graduate School and published in *A Handbook for Theses and Dissertations*, available at www.gradschool.utah.edu/thesis.

The format of the thesis must be approved by the Thesis Office, which is located in the Graduate School in Room 302, Park Building. Alternatives to the thesis are permitted in the OEH Program. A thesis/project formatted submission to a peer-reviewed journal is an acceptable alternative to a traditional thesis (see Appendices A and B). The Supervisory Committee of the student completing a non-thesis master's degree must sign and submit the *Report of the Final Project for the Master's Degree* or the *Report of the Final Examination or Certification of Completion for the Non-thesis Master's Degree* form to the Academic Coordinator. This form is due by the last day of the semester in which the student expects to graduate.

Defense/Seminar

The student must make a pre-defense presentation of their research, but only the student's Supervisory Committee is present to provide critiques on additional research to be conducted and/or changes to consider for the final defense. The final defense presentation is to be held at least 10 days after the pre-defense with notices posted as noted below on campus indicating when the research information will be presented as a public seminar. The seminar will be considered as the final defense.

The date and time of the final defense must be widely posted 7 days in advance (at minimum, this must be posted at entrances to the RMCOEH, at the entrance to the RMCOEH classroom, on the Ergonomics and Safety Program's bulletin board in the Department of Mechanical Engineering, and in the Dept. of Family and Preventive Medicine's bulletin board).

PhD Program and Course Requirements

The PhD in the OEH Degree Program consists of: 1) a Core Curriculum that is emphasis-specific, 2) Elective courses, and a 3) doctoral dissertation. As part of a master's degree, or doctoral degree, all students will also have completed the Occupational Safety and Health (OSH) Solutions class and a Practicum. The "Solutions class" takes Occupational Safety and Health problems or concerns in businesses, analyzes them in the classroom and returns solutions to the workplaces. This course and the associated field exercises provides the students with practical, problem-solving experiences.

The PhD in OEH Degree Program's Core Curriculum for each program emphasis is depicted in the tables below. Electives will be selected from a list of options with guidance from the student's assigned faculty Advisor. The electives will generally focus on those needed for the student's area of emphasis (e.g., industrial hygiene, chemistry and toxicology for the Industrial Hygiene emphasis). All PhD in OEH students will additionally

complete a doctoral dissertation. All PhD in OEH emphases will be a minimum 40 credit hours for those with an appropriate prior master's degree and 64 for those without a prior master's degree.

Credits

In Table 9 are the current credit requirements for obtaining a PhD in the OEH Programs.

Table 9
Credit Requirements for the PhD

	PhD in OEH (with a prior Master's* degree that included the core OEH courses)	PhD in OEH (either without an appropriate prior Master's degree or lacking the core OEH courses)**
Current Credit Requirements	40	64

*Generally a Master of Science in Occupational Health (MSOH) or Master of Occupational Health degree. Other degrees are possible and will be considered on a case-by-case basis.

**Those having successfully completed some of the prior core courses (e.g., through a Master of Public Health degree that did not include all of the OEH core courses) may receive partial credit with a decrease in the total number of credits required for the PhD.

PhD Supervisory Committee

Upon admission, all students will be assigned a Primary Faculty Mentor from among the program's core faculty. That mentor will be matched to the student based on the projected area of research interest. It is anticipated the Primary Faculty Mentor will also serve as the Supervisory Committee Chair.¹

During the first semester, a PhD Supervisory Committee will be formed consisting of five faculty members, the majority of whom will be regular doctoral faculty in the program, one of whom will be the Primary Faculty Mentor. The primary criteria for Supervisory Committee selection are interest and expertise in a topic relevant to the student's projected dissertation research topic. The Committee will be drawn with close input and advice from the Primary Faculty Mentor who will assume the role of Supervisory Committee Chair. One member of the Committee may be from another department at the University of Utah. Another member may be external to the University whose expertise is relevant to the student's anticipated dissertation topic. The Supervisory Committee will be responsible for approving the student's academic program, preparing and judging the qualifying examination, approving the dissertation subject, and administering the final oral examination (dissertation defense).

PhD Core Coursework

Doctoral students will complete a minimum of approximately three semesters (six semesters if no prior appropriate master degree) of full-time course work as approved by the Supervisory Committee and reflected in an approved Program of Study. Part-time study plans are possible for highly select students, but will be *carefully* evaluated on a case-by-case basis for detailed plans to enhance successful completion (especially preclude dropouts), and require prior approval from the Supervisory Committee.

For students with an accredited Master of Science in Occupational Health (MSOH) that included the prior core coursework, evidence of successful course completion

will result in waiving this requirement. For those with a comparable master's degree from Utah or elsewhere, the graduate OEH core may be waived based on review of the comparable course for content and successful completion.

For those without this degree, the graduate core is required although individual courses may be waived by the Advisory Committee based on comparable graduate work in Utah or elsewhere. For most students without an accredited MSOH degree, completing the core courses will require the equivalent of approximately three semesters of a full academic year of study. See Table 10 for a list of all PhD core courses.

Coursework: Emphasis of Study

Students will take required coursework for the emphasis of study (e.g., industrial hygiene, occupational injury prevention). Students will work with the Primary Faculty Mentor/Supervisory Committee Chair and Supervisory Committee to select additional electives to complete their formal coursework requirements (see Tables 12-#).

Minimum credits with Masters = 40
Minimum credits without Masters = 64

Doctoral students in all emphases are also expected to participate in our highly successful, biweekly Journal Club (no credit) for purposes of developing and refining critical skills for faculty-guided critical methodological analysis and grading of literature in an interdisciplinary forum. Four Outreach activities are also to be accomplished over the duration of the curriculum to obtain experiences teaching and interacting with diverse audiences.

Language Requirement

English language proficiency is required. Unless determined as necessary by the Supervisory Committee based on the nature of the dissertation work anticipated, there will be no other language requirement (Spanish language proficiency may be required for highly select research topics addressing, e.g., workplace injuries in immigrant populations). Starting Spring 2014 the minimum requirements for English proficiency for admission to the University of Utah are: TOEFL iBT: 80, TOEFL pBT: 550, IELTS: 6.5.

OEH Qualifying Examination

The OEH Qualifying (preliminary) Examination will be a combined oral and written examination that includes ascertainment of mastery of both the core OEH coursework, as well as the emphasis specific coursework. The MSOH and MOH (Master of Occupational Health) Program has a high quality examination that includes both standardized examination questions as well as short answer/essay. That examination will be the template for the written part of the qualifying examination, although with doctoral level material.

Dissertation Research Proposal

Candidates will prepare and defend their proposal for a dissertation. They will first prepare a 3-page structured proposal of the research topic and methods, which must be approved

¹ Exceptions will likely be rare. Exceptions are anticipated to occur primarily due to a change in the thrust of the research dissertation.

**Table 10
Core Courses**

All Program Courses Course #	Title	Credit Hours
Core Courses		
FP MD 6100 (6190)	Biostatistics I (Online)	3
FP MD 6370	Intro to Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6761	Ergonomics	3
FP MD 6760	Admin and Management of Health and Safety Programs	3
FP MD 7100	Biostatistics II*	3
FP MD 6715	Occupational Health and Safety Solutions	3
Varies (one of:)	Ethics Course (choose one:)* MDCRC 6430 Bioethical Issues in Clinical Research; Phil 7550 Research Ethics	1-3
Varies (choose 3 credits total:)	Adv. Epidemiology (choose one+)* FPMD 7300 Epidemiology II; FPMD 7720 Occup. Injury Epidemiol; MDCRC 6260 Behav. Community Intervention; MDCRC 6160 Pharmacoepidemiology; MDCRC 6110 Intermediate Epidemiol.; FPMD 7xxx Adv Occup. Epidemiol	3
Subtotal		24

*Course generally not taken during MSOH curriculum, but a Core Course for PhD in OEH. Thus, these credits must be added in to the subtotals to account for credit requirements for those with a prior MSOH.

**Table 11
Course Electives**

Electives		
FP MD 7300	Epidemiology II	3
FCS 6120	Demographic Methods	2
MDCRC 6240	Community Intervention Studies	1
MDCRC 6160	Pharmacoepidemiology	2
MDCRC 6040	Design and Implementation of Clinical Trials	1
MDCRC 6120	Cost-Effectiveness Analysis	2
FP MD 6311	Research Design	3
FP MD 7310	Advanced Research Design	1
Biostatistics		
MDCRC 6210	Regression Models	1

MDCRC 6130	Introduction to Decision Analysis	1
MDCRC 6140	Intermediate Decision Analysis Modeling	1
MDCRC 6200	Meta-Analysis	3
FP MD 6730	Quantitative Risk Assessment	3
FP MD 6106	Categorical Data Analysis	3
MATH 5040	Stochastic Processes and Simulation I	3
MDCRC 6020	Data Management	3
FP MD 6101	Data Analysis using SAS	
Ergonomics and Safety		
MEEN 6120	Human Factors Engineering	3
MEEN 6110	Industrial Safety	3
MEEN 7100	Advanced Ergonomics	3
MEEN 7105	Advanced Ergonomics Lab	3
MEEN 7110	Systems Safety	3
MEEN 7120	Functional Musculoskeletal Anatomy for Engineers	3
MEEN 6960	Work Physiology and Occupational Heat Stress	2
Management		
FP MD 6400	Public Health Policy and Administration	3
MGT 6051	Managing and Leading in Organizations	1.5 - 3
Toxicology		
FP MD 6752	Introduction to Toxicology**	3
PHTX 7114	Principles of Toxicology	2
PHTX 7620	Analytical Toxicology	2
PHTX 7630	Mechanism of Toxicology	2
Finance		
ECON 7320	Advanced Health Economics	3
ACCTG 5110	Financial Accounting I	3
MDCRC 6230	Health Services Research	3
FINAN 5270	Business Risk Management	3
Hazardous Substance Course		
FP MD 6756	Hazardous Substances	3
Evidence Based Practice		
PHIL 7570	Case Studies and Research Ethics	1
PHIL 6540	Engineering, Ethics, and Society	3
FP MD 6504	Clinical Behavioral Aspects of Industrial Hygiene,	3
FP MD 6751	Advanced Industrial Hygiene**	3
FP MD 6730	Quantitative Risk Assessment	3
FP MD 6753	Industrial Ventilation**	2
FP MD 6754	Noise and other Physical Agents	2
FP MD 6703	Clinical and Behavioral Aspects of Ventilation	3
ME EN 6700	Intermediate Fluid Dynamics	3
ME EN 6710	Aerodynamics	3
Subtotal		24

**Required for PhD in OEH (IH emphasis, 8 credits)

**Table 12
Industrial Hygiene Additional Required Courses**

Emphasis Specific Requirements: IH		
FP MD 6752	Introduction to Toxicology**	3
FP MD 6751	Advanced Industrial Hygiene**	3
FP MD 6753	Industrial Ventilation**	2
Subtotal		8

**Table 13
Occupational Injury Prevention Additional Required Courses**

Emphasis Specific Requirements: OIP		
FP MD 7720	Occupational Injury Epidemiology+	3
FP MD 7xxx	Advanced Occupational Epidemiology	3
Subtotal		6

+Required for PhD in OEH (OIP emphasis, 6 credits)

by the Supervisory Committee. Once the proposal is approved, the student will then prepare a paper of up to 12 pages and in accordance with the PHS-398 guidelines for writing project proposals, as if preparing the proposal for submission to a government agency for funding. This information on the proposed project/thesis should describe the background, methods planned for use to conduct the study, and the statistical methods plan, and references. It is important to note that this document can and should serve as the basis for the student's thesis or manuscript, generally requiring only addition of the data, statistical results and conclusions when the research is completed. Based on this documentation, the Committee will determine if the student is prepared to proceed to conduct the formal project/thesis and this document is to be approved by signature from the students Supervisory Committee prior to the student beginning his/her research project. After 1) approval of the proposal, 2) successful completion of core coursework (if applicable) and 3) successful passage of the qualifying examination, the candidate may commence the research project.

Dissertation

The candidate will incept and execute a quality, scientific research project. They must prepare, submit and defend a dissertation embodying the results of their scientific research. The dissertation will provide evidence of originality and the ability to do independent investigation and it must contribute to knowledge. The style will be either: 1) traditional dissertation format in accordance with the Graduate School requirements for formatting, or 2) publishable paper format (with a minimum of 3 manuscripts).² The style

² Formatting must meet the requirements of the Graduate School Thesis Office. Once students begin writing submitting their work to the Thesis Office for a preliminary review is highly recommended.

and format will be based on the plan negotiated with the Supervisory Committee, which will incorporate the candidate's career goals.

A minimum of 14 credits in dissertation research will be required. Timing of those credits may be negotiated with the Supervisory Committee. (See Table 14.)

Table 14
Dissertation Credit and Total Credit Hours

Dissertation		
FP MD 7977	Dissertation	14
Total Credits		40+ to 64+ ‡

‡ At least 40 credits with appropriate master degree and all core courses completed. At least 64 credits without appropriate master degree and no core courses completed.

Graduate Certificate of Occupational Safety and Health (COSH)

The COSH will require students to complete at least 15 credit hours of graduate level coursework in OSH. Students will elect to participate in one of the following options:

- COSH with emphasis in Ergonomics and Safety (E&S)
- COSH with emphasis in Industrial Hygiene (IH)
- COSH without emphasis (General OSH, (G))
- COSH with emphasis in Occupational Health (OH)

Coursework

Courses required for the COSH are outlined in the following tables and vary by emphasis. See Table 11 for the Certificate of Occupational Safety and Health curriculum.

Table 15
Graduate Certificate of Occupational Safety and Health Curriculum

Course Prefix & Number	Title	Credit Hours	Emphases
Required Courses			
FP MD 6370	Occupational Epidemiology	3	All
FP MD 6750	Fundamentals of Industrial Hygiene	2	All
FP MD 6760	Administration and Management of Health and Safety Programs	3	All
	Sub-Total	8	
Elective Courses: Select at least three of the following			
FP MD 6100	Biostatistics I	3	IH, OH, G
FP MD 6703	Clinical and Behavioral Aspects of Occupational Injuries and	3	OH, G
FP MD 6504	Clinical and Behavioral Aspects of Preventive Medicine	3	OH, G
FP MD 6752	Introduction to Industrial Toxicology & Physiology	3	IH, OH, G

FP MD 6751	Advanced Industrial Hygiene	3	IH, G
FP MD 6753	Industrial Ventilation	2	IH, G
FP MD 6754	Noise and Other Physical Agents	2	IH, G
FP MD 6756	Hazardous Substances	3	IH, G
FP MD 6730	Quantitative Risk Assessment	3	IH, G
FP MD 6761 / ME EN 6100	Ergonomics	3	All
ME EN 6110	Introduction to Industrial Safety	3	E&S, G
ME EN 6120	Human Factors Engineering	3	E&S, G
	Total Number of Credits	15-17	

For the curriculum plan and proposed time line for the Certificate of Occupational Safety and Health please review Tables 12-18.

Table 16
COSH without Emphasis (General OSH)

Course Prefix & Number	Title	Credit Hours
Required Courses		
FP MD 6370	Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6760	Administration and Management of Health and Safety Programs	3
	Sub-Total	8
Elective Courses: Select at least three of the following courses.		
FP MD 6100	Biostatistics I	3
FP MD 6703	Clinical and Behavioral Aspects of Occupational Injuries and Diseases	3
FP MD 6504	Clinical and Behavioral Aspects of Preventive Medicine	3
FP MD 6752	Introduction to Industrial Toxicology & Physiology	3
FP MD 6751	Advanced Industrial Hygiene	3
FP MD 6753	Industrial Ventilation	2
FP MD 6754	Noise and Other Physical Agents	2
FP MD 6756	Hazardous Substances	3
FP MD 6730	Quantitative Risk Assessment	3
FP MD 6761 / ME EN 6100	Ergonomics	3
ME EN 6110	Introduction to Industrial Safety	3

ME EN 6120	Human Factors Engineering	3
	Total Number of Credits	15-17

Table 17
COSH with Emphasis in Industrial Hygiene

Course Prefix & Number	Title	Credit Hours
Required Courses		
FP MD 6370	Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6760	Administration and Management of Health and Safety Programs	3
	Sub-Total	8
Elective Courses: Select at least three of the following courses.		
FP MD 6100	Biostatistics I	3
FP MD 6752	Introduction to Industrial Toxicology & Physiology	3
FP MD 6751	Advanced Industrial Hygiene	3
FP MD 6753	Industrial Ventilation	2
FP MD 6754	Noise and Other Physical Agents	2
FP MD 6756	Hazardous Substances	3
FP MD 6730	Quantitative Risk Assessment	3
	Total Number of Credits	15 to 17

Table 18
Class Schedule for the COSH with emphasis in Industrial Hygiene

Course Prefix and Number	Course Title	Credit Hours
Fall Semester		
FP MD 6370	Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6756	Hazardous Substances	3
Spring Semester		
FP MD 6760	Administration and Management of Health and Safety Programs	3
FP MD 6751	Advanced Industrial Hygiene	3
FP MD 6752	Introduction to Industrial Toxicology & Physiology	3

Table 19
COSH with Emphasis in Occupational Health

Course Prefix & Number	Title	Credit Hours
Required Courses		
FP MD 6370	Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6760	Administration and Management of Health and Safety Programs	3
	Sub-Total	8
Elective Courses: Select at least three of the following courses.		
FP MD 6100	Biostatistics I	3
FP MD 6703	Clinical and Behavioral Aspects of Occupational Injuries and Diseases	3
FP MD 6504	Clinical and Behavioral Aspects of Preventive Medicine	3
FP MD 6752	Introduction to Industrial Toxicology & Physiology	3
	Total Number of Credits	17

Table 20
Class Schedule for the COSH with emphasis in Occupational Health

Course Prefix and Number	Course Title	Credit Hours
Fall Semester		
FP MD 6370	Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6703	Clinical and Behavioral Aspects of Occupational Injuries and Diseases	3
Spring Semester		
FP MD 6760	Administration and Management of Health and Safety Programs	3
FP MD 6100	Biostatistics I	3
FP MD 6752	Introduction to Industrial Toxicology & Physiology	3

Table 21
COSH with Emphasis in Ergonomics and Safety

Course Prefix & Number	Title	Credit Hours
Required Courses		
FP MD 6370	Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6760	Administration and Management of Health and Safety Programs	3
FP MD 6761 / ME EN 6100	Ergonomics	3

ME EN 6110	Introduction to Industrial Safety	3
ME EN 6120	Human Factors Engineering	3
	Total Number of Credits	17

Table 22
Class Schedule for the COSH with emphasis in Ergonomics and Safety

Course Prefix and Number	Course Title	Credit Hours
Fall Semester		
FP MD 6370	Occupational Epidemiology	3
FP MD 6750	Fundamentals of Industrial Hygiene	2
FP MD 6761 / ME EN 6100	Ergonomics	3
Spring Semester		
FP MD 6760	Administration and Management of Health and Safety Programs	3
ME EN 6110	Introduction to Industrial Safety	3
ME EN 6120	Human Factors Engineering	3

Time to Completion and Thesis Submission Deadlines

It is highly recommended to work on the degree project before completion of the first year. Students should begin working with faculty in the Spring of the first year to identify their proposed topic and hypothesis to develop the Research Concept Proposal. The background and methods may be drafted next. Students should meet with the Supervisory Committee Chair to discuss an appropriate journal to target for publication of their thesis/publishable paper once a proposal has been accepted by the Chair.

1. **Master's Thesis/Publishable paper 1-page Research Concept proposals (see Appendices A and B) are due to your Committee Chair no later than April 1st.**
2. **Master's Thesis/Publishable paper 5-7 pages Detailed Research Project Plans are due to the Technical Writer and Editor no later than:**
 - a. **May 1st of the year prior to planned graduation;**
 - b. **May 1st for Occupational Medicine Research projects.**

Thesis/Publishable paper submissions must meet the requirements in this document (see Appendices A and B) or students risk having their manuscripts returned without further review and instructions to follow the guidelines contained herein. A journal for publication should be identified prior to submission to the Technical Writer. After the student has made the edits requested by the RMCOEH Technical Writer and Editor, the student will forward the work to the Chair of the Supervisory Committee. Students may not bypass the Technical Writer, as faculty will not review for scientific content until the written intents are clear and correct.

1. **Data collection and analyses are recommended to be performed August through November of the year prior to graduation. During the course of performing data collection and analyses, the drafting of the paper should continue in earnest in order to meet the deadlines.**

2. **The first draft of the paper is due to the Technical Writer and Editor no later than January 1st of the year in which graduation is desired.**

Note: Deadlines appropriately adjusted if off-cycle.

Deadline for MOH degree seeking residents/OMRs to submit publishable papers are as follows:

1. **October 15th for the resident's first submission to the Technical Writer**
2. **November 1st to the Occupational Medicine Residency Program**

Director Note: Deadlines appropriately adjusted if off-cycle.

Thesis/Publishable paper submissions must also meet the writing requirements (see Appendices A and B) contained herein, or students risk having their manuscript returned without further review and instructions to follow the guidelines. In most cases, there will be a minimum of 1-3 sets of revisions required, and frequently more depending on the clarity of the writing and precision in communicating the results.

***Students that fail to meet the submissions deadlines will not be eligible for graduation in the desired semester and will be required to take an additional semester of coursework. These are hard deadlines and are not negotiable.**

If the student enrolled off cycle or there is a desire to graduate off-cycle, these timelines are accordingly adjusted (i.e., December 1st / January 1st / September 1st for Fall graduation).

Note: Not only is the Technical Writer and Editor able to provide writing assistance before these deadlines, students are encouraged to meet with the Technical Writer early in the writing process and then periodically as more content is added.

Process for Thesis/Publishable Paper Review

All submissions to the Technical Writer will be entered into a publicly posted queue and processed in the order received, no exceptions. Each rewrite or resubmission to the Technical Writer will count as a new entry into the queue; every time students submit they are placed at the end of the queue. Students that fail to follow the writing requirements as outlined in Appendices A and B will have their manuscripts returned without any review.

Resources for Thesis/Publishable Paper Review

The entire month prior to the first submission deadline to the Technical Writer a Writing Boot Camp will be held once a week in the Rocky Mountain Environmental and Occupational Health Center. The timeframes for thesis/publishable paper Writing Boot Camp will be:

- **April** for detailed research project plans
- **Late November through December** for development of the first draft for thesis/publishable paper that is due no later than January 1st

Attendance at Writing Boot Camp is mandatory for students in their second program year; students are required to attend the sessions and illustrate progress on their

thesis/publishable paper. Writing Boot Camp is free and provides students with the opportunity to write significant chunks of their proposed project plans and/or thesis/publishable paper. Writing Boot Camp benefits students by offering i) a scheduled time in which to write, ii) motivation and support from peers, iii) hands-on reviews and assistance from the Technical Writer and other staff/faculty, and iv) an environment with minimal distractions.

Appendix A: Graduate Student Conduct and Dismissal³ Policy

Rocky Mountain Center for Occupational & Environmental Health
(RMCOEH)

Department of Family & Preventive Medicine (DFPM)

Graduate Programs of Study

*Master of Science in Occupational Health (MSOH) Master of Occupational Health (MOH)
Doctor of Philosophy in Occupational & Environmental Health (PhD) Graduate Certificate
of Occupational Safety & Health (COSH)*

Student Performance Expectations

The graduate programs sponsored by the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH) within the Department of Family and Preventive Medicine (DFPM) at the University of Utah maintain the highest academic standards and abide by the general Standards of Behavior (Section III) and expectations of Professional and Ethical Conduct (Section VI) outlined in the University's Student Code of Rights and Responsibilities (University Policy # 6-400). All graduate programs sponsored by RMCOEH within the DFPM also take measures to ensure that the Standards of Academic Performance (Section IV) and Academic Conduct (Section V) are met.

Unacceptable Academic Performance

Unacceptable or incomplete academic performance includes, but is not limited to: 1) failure to pass all courses (including core, elective and remedial) with a grade of B- or better; and 2) a cumulative GPA of less than 3.0. Unacceptable academic performance could lead to a maximal sanction of dismissal from the academic program.

Academic Misconduct

In a research environment, there is an absolute need for trust between a student and their mentor, consequently the RMCOEH and the DFPM take cases of academic misconduct very seriously. Cases of academic misconduct include, but are not limited to: 1) plagiarism, 2) cheating, 3) misrepresenting one's work, 4) fabrication or falsification of information, 5) disobeying any rule as specified by the program rules for exams and homework assignments (see below), and 6) intentionally helping, or attempting to help, another person commit an act of misconduct.

Students committing misconduct can expect up to three levels of sanction: sanctions imposed by the instructor(s), sanctions imposed by the RMCOEH/DFPM, and sanctions imposed by the university. An instructor may impose a maximum sanction of failing the student in the course. The RMCOEH/DFPM may expel the student from their chosen graduate program of study, and the university may expel the student from the university

³ Adapted from the University of Utah Policy 6-400 and the University of Utah Bioscience PhD program.

entirely, or even revoke a previously awarded degree. For each level of sanction, the student has the right to appeal. All cases of misconduct will be documented and placed in the student's file.

Program Rules for Coursework

The following rules apply for all course exams and written assignments unless given specific direction otherwise by the course instructor.

1. A student must work entirely alone or in assigned groups/teams
2. A student may not share information about any aspect of the exam with any student who has not already taken the exam this year, or its equivalent in future years
3. A student must direct all questions concerning the exam or homework assignment to the course instructor
4. It is the student's responsibility to obtain clarification from the course instructor if there are questions concerning how these requirements apply within a particular course
5. A student shall not plagiarize. Plagiarism includes, but is not limited to: i) presenting another's writing, ideas, research, etc. as one's own original work; ii) using a figure, table, or data from another's work and failing to acknowledge the source; iii) lengthy paraphrasing without appropriate acknowledgement, including one's own previous work if published; and iv) use of images, tables, data, text, etc. from open sources without crediting the source and citing in accordance with the publisher's wishes

Please refer to the following definitions, as those students funded by training and research grants must also abide by federal standards.

Definitions

Since many graduate students are funded by training and research grants and must abide by federal standards, it is important to know the definition of scientific misconduct as defined by the U.S. government.

1. **National Academy of Sciences Definition of Misconduct in Science:** Misconduct in science is defined as fabrication, falsification, or plagiarism, in proposing, performing, or reporting research. Misconduct in science does not include errors in the recording, selection, or analysis of data; differences in opinions involving the interpretation of data; or misconduct unrelated to the research process. All students should be familiar with the rights and responsibilities articulated in the Code of Student Rights and Responsibilities, University Policy 6-400 (<http://www.regulations.utah.edu/academics/6-400.html>).

The following definitions, found in Section I.B. are particularly important to academic conduct within the Programs and are taken from University of Utah's Code of Student Rights and Responsibilities, University Policy 6-400.

2. **Academic misconduct** includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information, as defined further below. It also

- includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct.
3. **Cheating** involves the unauthorized possession or use of information, materials, notes, study aids, or other devices in any academic exercise, or the unauthorized communication with another person during such an exercise. Common examples of cheating include, but are not limited to, copying from another student's examination, submitting work for an in-class exam that has been prepared in advance, violating rules governing the administration of exams, having another person take an exam on one's behalf, or violating any rules relating to academic conduct of a course or program.
 4. **Misrepresenting one's work** includes, but is not limited to, representing material prepared by another as one's own work.
 5. **Plagiarism** means the intentional unacknowledged use or incorporation of any other person's work in, or as a basis for, one's own work offered for academic consideration or credit or for public presentation. Plagiarism includes, but is not limited to, representing as one's own, without attribution, any other individual's words, phrasing, ideas, sequence of ideas, information, tables, figures, images, data or any other mode or content of expression.
 6. **Fabrication or falsification** includes reporting experiments or measurements or statistical analyses never performed, manipulating or altering data or other manifestations of research to achieve a desired result, falsifying or misrepresenting background information,
 7. **Academic sanction** means a sanction imposed on a student for engaging in academic or professional misconduct. It may include, but is not limited to:
 - Requiring a student to retake an exam(s) or rewrite a paper(s)
 - Issuance of a grade reduction or even a failing grade
 - Probation, suspension or dismissal from a program
 - Probation, suspension or dismissal from the university
 - Revocation of a student's degree or certificate

It may also include community service, a written reprimand, and/or a written statement of misconduct that can be put into an appropriate record maintained for purposes of the profession or discipline for which the student is preparing.

Academic Misconduct

The RMCOEH and the DFPM take cases of academic misconduct very seriously. As found in the definitions above, cases of academic misconduct include such things as 1) plagiarism, 2) cheating, 3) misrepresenting one's work, 4) fabrication or falsification of information, 5) disobeying any rule specified by the Program Rules for Coursework, and 6) intentionally helping, or attempting to help another person commit an act of misconduct. The RMCOEH/DFPM faculty reserve the right to use electronic software to scan reports, essays, papers, theses/dissertation, proposals and any other written material for evidence of plagiarism.

Resolving Academic Misconduct Issues

The RMCOEH, the DFPM, and the University of Utah encourage informal resolution of minor problems involving academic standards. Students are urged to discuss problems

with the involved instructor(s) and/or their academic advisor. Faculty may place letters of concern of conduct in the student's file if warranted.

A more formal process is required when there is a serious violation or if a student is charged with a second instance or multiple instances of academic misconduct. This process, detailed in the Policies and Procedures section of this document, provides the framework with which violations are reported and adjudicated by RMCOEH/DFPM faculty. All accusations of cases of misconduct that are verified in the program review process will be documented in the student's file.

Student Pledge

I pledge to follow and promote these standards while a student in any of the graduate programs sponsored by RMCOEH within the DFPM. I will strive to achieve academic excellence through diligent work, seeking help and guidance from program faculty, and by conscientiously attending to any remedial work required. I will not commit acts of misconduct and will promote the Center/Department's position by maintaining the highest standards of ethical conduct.

I have read and understand the RMCOEH's **Graduate Student Conduct and Dismissal Policy**. I also acknowledge that I have received a copy of the RMCOEH's **Policies and Guidelines** document and that it is my responsibility to read, understand and follow the rules described therein. I further agree that it is my responsibility to ask questions about anything that I do not fully understand.

Student Signature:

Date:

Honor Code

I pledge to follow the Honor Code and to obey all rules for taking exams and performing homework assignments as specified by the course instructor. I understand that when asked to follow the Honor Code on exams or homework assignments I must follow the rules below.

1. When following the Honor Code a student must work entirely alone on exams.
2. When following the Honor Code a student may **not** share information about any aspect of the exam with other members of the class, other faculty members, or other scientists.
3. When following the Honor Code a student must direct all questions concerning the exam or homework assignment to the course instructor or teaching assistant.

4. When following the Honor Code it is the student's responsibility to obtain clarification from the instructor if there are questions concerning the requirements of the Honor Code.

Student Signature:

Date:

Appendix B: Practicum Outline

The Practicum report must be a minimum of 5 pages. Throughout the report, students should detail how each of the Practicum objectives for students was met.

The following is a rough outline of what must be included in the Practicum report. Please note that reports must be double spaced throughout.

The cover page lists the following:

1. Practicum report title (that includes site names)
2. Student's name
3. Degree, status as candidate, and specialty (for example: MSOH Candidate: Industrial Hygiene)
4. Semester in which Practicum was completed
5. Mentor's name, degrees
6. Company name

A table of contents is optional. The table of contents follows the cover page and lists all first- and second-level subheads, followed by period leaders and page numbers at the right margin.

The main body of the Practicum report must detail how the following objectives were met:

- How the student operated as a member of the IH (or Health and Safety) program of the company/organization; this may include attending meetings to learn how the health, safety and environmental programs related to one another;
- At least one key IH project for which the student was responsible (e.g., conducting a monitoring program for a potentially hazardous agent) including the following: preparation of the research plan, conducting monitoring, evaluating data/samples and preparing a report for management (ideally the report to management will include an oral presentation);
- How the student provided training health and safety programs to fellow employees;
- How the student learned to use new monitoring equipment for evaluation of worker exposures;
- Any federal and state regulations along with company/organization rules (e.g., company policy) related to protection of worker health (may include safety and environment).

While students are free to structure the report as they see fit, they are strongly encouraged to include the following:

- **Introduction:** A brief summary of the project, the site, and the key project
- **Acknowledgements:** An acknowledgement of all those that assisted in making the Practicum possible including NIOSH grant(s), the company, the mentor, etc.

- **References:** A list of references for any source material used to write the report

Appendix C: MSOH/MOH/PhD Programs Scientific Writing and Thesis/Research Paper Style Expectations

Please follow these guidelines for all graduate work in the MSOH, MOH, and PhD Programs. You **must** follow this formatting style and these directions for thesis and dissertation work unless you have received pre-approval from both your thesis/dissertation Chair, as well as the MSOH/MOH/PhD Program Director to digress to another specific style (e.g., to target a specific journal). N.B., Failure to follow these guidelines will result in required revision(s) irrespective of content. For further information, a reference may be of assistance. (Day RA, Gastel B. How to Write and Publish a Scientific Paper, 6th edition. Westport CT: Greenwood Press, 2006.)

Please also follow the guidelines on scientific writing for your other work in these graduate programs unless there are specific instructions to the contrary from the instructor.

General Principles

The following general principles apply for all sections of writing, as well as other documents such as letters, reports and other forms of communication in your careers.

1. Compose paragraphs.
 - a. There is to be one subject per paragraph.
 - b. There should be a main sentence for that paragraph, which is usually the first sentence.
 - c. Paragraphs should not be unduly long.
 - d. Avoid rambling, including unnecessary repetition.
2. Outline the thoughts you want to make in each section. They will form your main sentences for each of a succession of paragraphs.
3. There are rare instances where a paper should not be constructed in chronological order.
 - a. Sequencing a paper's paragraphs in non-chronological order will tend to be illogical. Invariably, it is difficult to follow as the reader is challenged to ascertain the sequencing, likely confusing the reader.
4. Use positive language.
 - a. Start by noting what you did and how.
 - b. Avoid beginning sections with what you did not do, or limitations and weaknesses.
5. Formal language at all times.
 - a. Do not use contractions (other than a contraction within a required quotation).
6. Simple sentences are desirable in scientific writing (this differs from fictional writing). Remember the goal is to provide clear communication.
 - a. Use precise, direct language.
 - b. Do not assume something is known.

- c. If it can be written in a shorter sentence, it is better. It will be more clearly understood. On the other hand, if a person who is a student in a program, or otherwise in life, if someone else writes in a long, wordy manner with multiple conjunctions and rambles in the belief this will help the writing style; and/or there is a belief this is a more advanced mode of communication; the student will have succeeded in producing a sentence the reader dislikes and makes the reader work harder which is not cognitive-ergonomically correct and not so infrequently, is somewhat confused about what the real intent of that given, rambling sentence, which can produce a series of interesting reactions in the reader that range the gamut from impatience to disgust to confusion to anger to a deep sigh, especially if the problem is repeated in other sentences and elsewhere, again in a mistaken belief of actually helping foster clarity of thoughts.
 - d. Minimize negative sentences.
 - e. Avoid double negatives unless essential.
 - f. Avoid semi-colons. They have almost no use in formal scientific writing as they are by definition compound sentences. Compound sentences invariably invite confusion, which is exactly what is to be avoided. The sole, infrequent exception is the use of semicolons to separate compound fragments in a list after a colon.
 - g. Colons should almost never be used other than to precede a list of items that follows.
7. Avoid excessive wordiness. The shorter the words used the better provided they convey the same meaning. For example, consider the following clause: "...at right angles in reference to the airflow inside the sample chamber." This may be simplified to: "perpendicular to the chamber airflow" without loss of information, while reducing the reading burden from 12 to 5 words.
 8. Spell check carefully. Do not solely rely on the automated spell/grammar checkers, as they are particularly inadequate for scientific terms.
 9. Avoid extreme language. Use extreme language only when unequivocally apropos.
 - a. "Very" is a very bad word to use.
 - b. Other extreme language is a warning flag for problems with exaggeration (e.g.):
 - i. Always, constantly continuously, continually, permanently;
 - ii. Never, nothing;
 - iii. Invariably, perpetually;
 - iv. Clearly, obviously, plainly, unmistakably.
 10. Avoid extending beyond what your data allow.
 - a. Results, Discussion and Conclusions should all be directly related to the methods and data you produced.
 - b. Avoid making statements or conclusions that extend beyond your data.

- c. There are exceedingly few papers that are so strong that policy issues can come out of them. Speculating on policy issues in the discussion section of the paper raises questions about biases, raises concerns about where else the author exaggerated, paradoxically reduces persuasion, and invites rejection. This is rather thin ice that should be cautiously, if at all, trod upon especially if other papers in that journal do not speculate in policy. A better process is to not speculate on policy in a scientific paper, then let the editor and peer reviewers decide if such language is to be invited.
11. Data are plural and datum is singular. Watch verb tenses, as your spell/grammar checkers will unequivocally not catch your errors. Data errors make you look non- scientific.
 12. e.g., (examples are gratia) is “for example.” i.e., is (id est) is “that is.” N.B. is (nota bene) is “note well.” Please do not confuse these terms.
 13. With rare exceptions, use metric units and put (English units) in parentheses, if included at all.
 14. Do not use abbreviations without defining them. For example, hydrogen sulfide (H₂S).
 15. Use generic names, rather than trade names where possible. If a specific type of equipment is used to produce the results and it is important for the reliability of the results to specify the type of equipment, then note that name in one location in the methods where first mentioned in the methods section. Elsewhere, use a generic term. For medications or trade name chemicals, only use the trade name if absolutely essential or if that name is the name that is nearly universally used and use of the generic would produce confusion.
 16. If the number is less than 1, use a zero in front of the decimal place so the reader sees the 0 (e.g., 0.05).
 17. Do not start a sentence with a number. (It is acceptable to spell out the number, e.g., “One”).
 18. Graphs should be made without color unless absolutely essential. Use other types of lines and boxes/circles. Color is costly and editors may be swayed away from publishing if you unnecessarily increase costs. Yet, if color is the only method to make the figure clear, then be sure to use it.

Appendix D: MSOH/MOH/PhD Programs Thesis/Research Paper Formatting Expectations

Hint: When starting a research project, continually type notes from the very first day. These notes should be structured into the following format. After completion of the research project, there will be extensive notes and results already in a draft. This will make writing a thesis/dissertation infinitely easier.

Titles Explain Research Results Succinctly

Format: Carefully consider 1) the strength of your results and 2) what journal(s) have published similar work previously. Carefully select the target journal with carefully considered input and approval from your Committee. *Format the article based on the "Instructions for Authors" for that journal.*

All manuscripts must be double spaced throughout, no exceptions.

Abstracts: Abstracts vary in length, but generally are approximately 250 words in length and structured using 4 subheads as follows. All students should use a structured abstract for their writing, even if the target journal does not use one. The subheads can be later deleted, yet the content will be preserved. (Lack of structuring most frequently results in omissions or attempts to combine things into one sentence, again resulting in lack of writing clarity.)

Introduction: Usually one and sometimes two sentences that include the purpose. Alternately, the one sentence introduction may set up the first sentence of the methods to state the purpose of the research project.

Methods: A succinct summary of the results. Must include the study design in the first sentence. Must include animals/cells/samples/population studied. Usually includes data collection methods. Independent and dependent variables must be specified. Important confounders or covariates should be mentioned, though all confounders are generally not able to be included in succinct abstracts. Basic analytical approach should be included.

Results: Succinct summary of the main results. Generally, report only multivariate model results in the abstract. Should include main quantified results and confidence bounds, not merely qualitative results.

Conclusions: Usually a one sentence conclusion and occasionally two sentences. Do not speculate beyond the boundaries of your data.

References: A list of all printed literature, websites, e-journals, videos, conference proceedings, posters, radio and television programs, laws and statutes, codes and standards, personal communications or any other sources from which information was used and/or cited within the text formatted consistently and according to the guidelines of the journal targeted for publication.

Text of the Dissertation, Thesis, or Paper Introduction

Introductions are usually about 3 to 5 well referenced paragraphs, with a 3 paragraph minimum. The trend over the past several decades is towards more succinct but complete introductions rather than 6-10-20 paragraphs of introductory material.

The most successful strategy for paragraph construction usually involves the following 3 (or more) paragraphs that have sometimes been described as “telescoping”:

- 1) Overview paragraph with the major outcome [e.g., numbers of people affected, prevalence rate, incidence rate, costs of the ‘big’ problem, morbidity, disability (e.g., how many people worldwide are affected by silicosis, how many people die per year from silicosis)],
- 2) Second paragraph that reviews what is known specifically about the area of this research project [i.e., identify what is known but also what the ‘hole’ in the knowledge base is (e.g., prior studies of solubility of silica to produce silicosis)] and
- 3) Third paragraph is the hypothesis for this research project. Depending on the specific topic, there may be a requirement for more paragraphs than the three above to sufficiently review the background material for your hypothesis.

As with other paragraphs in the paper, each introductory paragraph should include a main summary sentence.

There should be use of quantified data where possible in the sentences. All facts should be well referenced. It is generally better to use higher quality, original references rather than systematic or other reviews.

No more than one subject per paragraph.

(A background section may be required by your Committee. If so, it is to be attached as an appendix. See below.)

Methods

The study IRB approval (or animal subjects) should be noted in the first sentence, including the approval number.

The study design is stated.

The methods should be reviewed in chronological order (so the reader can follow the research ‘story’).

- Study setting, location, dates data were collected, exposure, follow-up
- Before IH or safety studies can collect exposure information the study must be approved by the IRB

The cell, animals, human subjects, population studied is specified in detail.

- Inclusion and exclusion criteria
- How was your population selected?

The exposure(s) [independent variable(s)] should be described in detail.

- Make sure to explain all the variables presented in your tables and figures (how where they collected, where they manipulated and if so – how?)

The dependent variable(s) should be described in detail.

- How where they collected? Did you manipulate your variables?

Covariates should be described. (For epidemiological studies, these are often discussed in one or two paragraphs with the exposures above).

- How where covariates chosen and why?

The analytical methods used to measure should be included in the above paragraphs.

Statistical Methods

A complete but succinct paragraph or two of the statistical analyses should be provided as the last paragraph of the methods. The statistical package used should be noted, including the version. Statistical testing generally follows a well-defined, sequential plan. The text should convey that systematic, logical, sequential approach.

- Did you have missing data? How where missing data points addressed?
- Where data points imputed? How? How many data points (N or %)?
- Did you check for interactions? Normal distribution? Correlations?

Results

The sequence is essentially always chronological.

For epidemiological studies, the first paragraph describes the basic epidemiology (e.g., prevalence, distribution of demographic variables). The basic descriptive variables are usually in Table 1.

- How many subjects were enrolled? Did you exclude subjects in your final analyses – why?
- Consider using a flow diagram.

Univariate analyses are in Table 2. A paragraph describes key univariate findings, though not all findings.

Multivariate analyses are in Table 3. A paragraph (or more) describes key multivariate findings, though not all findings.

- What did you adjust for and why?

There may be more than one paragraph for each of the above components of the results, but rarely more than two paragraphs.

Recognize that some readers start with the tables, thus all tables should be *clearly* labeled. They should be viewed as stand-alone ‘tables of results.’ No abbreviations not

defined in the table are allowed. Tables often require footnoting to completely explain them, note methods, identify covariates in a multivariate model, or note statistical significance.

Figures should be included where they help the reader understand the methods, equipment, or results. That which is not well conveyed other than through a figure should be represented in a figure.

Figures/graphs should be done without color whenever possible.

Discussion

The first paragraph should summarize the main results. The first sentence should hit the main conclusion of the entire research paper. Do not refer to a specific table or figure, however, discuss the results.

The second paragraph generally includes how the results compare with prior results, the degree of significance. Again, do not refer to a specific table or figure, however, discuss the results.

Either a paragraph on the study strengths or including the study strengths either in the first paragraph above or in the beginning of a paragraph with limitations below is usually necessary.

There must be a paragraph on limitations. This paragraph should include how the limitations were addressed, where appropriate. A cautious, rational statement regarding whether the results should stand despite the limitations is appropriate. Sometimes, the strengths and limitations are combined in one paragraph. That is only appropriate when there are few to discuss, otherwise confusion and poor writing are the predictable results of that approach.

Sometimes, additional research is suggested. However, since so many have made that statement, it has become rather stale.

The last paragraph of the discussion should succinctly summarize your results. Avoid direct duplication of prior sentences.

No more than one subject per paragraph.

Conclusion

What is your take home message?

Acknowledgements

The work should be acknowledged to be supported in part by the National Institute for Occupational Safety and Health, Training Grant Number T42/OH008414. Other acknowledgements should be made where appropriate. Unfortunately, some journals require permission to list individuals who contributed (which can be quite difficult at times), thus there is some reason to not make lists of acknowledgements long.

References

References should be numbered in the order they appear in the manuscript. If there is a clear journal that your Committee wishes you to utilize, then follow the referencing style for that specific journal. Otherwise, follow the APA style. Make sure the references are complete. In addition to each reference entry being complete, pay special attention to how/where the journal uses bold, italics, capitalization, and quotation marks to convey specific publishing information. For example, journal titles usually use a headline style capitalization scheme, whereas article titles are placed in quotation marks or use a sentence style capitalization scheme.

- It is recommended to use Endnote for referencing

Background

A background section contains information that is not publishable, yet is necessary to conduct the research. It may include definitions of TLV, PEL or similar terms. It may describe the purposes and limitations of statistical tests used in the research. It may describe the history of the test. In short, the background section includes a relatively long and tangential discussion of various aspects of the research that are typically NOT found in a research publication.

As the background section would make the paper 'unpublishable,' it is to be included as an appendix only if your Committee feels some information needs to be included. Then, it can readily be omitted to submit it without having to resequence the references in the text or otherwise substantially re-work the paper.

If your Committee does not require a background section, recognize some questions during the defense often originate with this background material. In short, know everything there is to know about your topic.

Appendix E: MSOH/MOH/PhD PowerPoint Slide Presentation Guidelines

The first step with PowerPoint slides presentations is to determine what the desired outcome or "goal" is for the learner. The goal of the presentation is something which is broad, and generally describes the ideal outcome of the presentation. The goal is supported by objectives.

Objectives are best phrased as learner centered objectives that contain: 1) action verb, 2) appropriate learning level (e.g., Recall/Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation), and 3) outcomes the learner should achieve.

Note that the educational content must match the level of education in your presentation (e.g., we cannot ask learners to apply an ergonomic evaluation method if we only describe it to convey knowledge about it). Countless examples of excellent objectives are available for each of your course lectures. It is not essential, and indeed may be distracting to include those objectives in the presentation; however, an excellent presentation will invariably incorporate these principles.

To accomplish the development of the overall goals and objectives, determine the three main points the learner should recall from the presentation. Ensure after completing the presentation that those three main points are: a) detailed in the presentation, generally not more than one major point per slide and generally with the main subject in the title of that slide, and b) summarized adequately in the final conclusions slide, again generally no more than one major point per bullet.

The following are guidelines for formatting of slides: Plan your talk to leave some time for questions and answers. Recognize that experience has repeatedly shown you will need at least 1 minute per slide, regardless of how fast you go through them during your review.

1. Generally, use dark background and light print. If you choose the reverse, about one larger font size is required for the same reading ability in the audience. Light backgrounds for prolonged time also produce more eye strain. Pick a background that complements the text.
2. Do seek to include pictures, graphs, and tables. Use them where they help to illustrate points. These 'liven' a presentation.
3. Tables of data should be legible and not full of incomprehensible numbers. The amount of information should be sufficient to make your quantitative point. E.g., consider using large font for the point estimate and smaller font for the 95% confidence bounds. Consider underlining the statistically significant results.
4. Be careful of video clips. Use them when all of the following conditions are met: they are the best method to illustrate the point, ii) that point is important for understanding the topic AND 3) there is sufficient time to ensure they function prior to the talk. Also, only use the length of a video clip necessary to make the point rather than allow a video or two to become your talk.
5. Avoid being too "cute" with special effects, e.g., fly-ins, music, etc. The Power Point presentations in more than one company became so elaborate with special effects that the company limited all future presentations to

- words only with no special effects.
6. Do list the source to credit copyrighted information. Delete those copyrighted materials from handouts.
 7. Generally, try to place a picture as well as text on the same slide, rather than merely a picture on a slide. This allows the inclusion of key bullets and the reader both sees the words and image they are to recall. Exceptions include the need for the entire slide to visualize the information on the picture.
 8. Know the audience. Be careful of including any jargon. Beware of including excessive scientific terms if they are beyond the average learner. Minimize including acronyms. Spell out a common acronym on a slide the first time used. Do NOT expect an uninformed audience to be able to track 3 acronyms throughout a presentation; you can a priori assure yourself you 'lost' them in jibberish.
 9. Size of font should generally not be less than 24 pt (e.g., Times New Roman, Times, Arial, Helvetica). Twenty-two (22) pt is quite small, and should be used only when the room environment is well understood (i.e., lack of bright lighting especially on/behind/near the screen, large screen available, seats not too far removed from the screen). Try limiting to only eight lines per slide in addition to title.
 10. The inclusion of an illegible slide with the common phrase of "I know this slide is not legible but" is unacceptable and may be considered an insult to the audience. A polished presenter will either adjust the table/figure/slide or otherwise make changes to make the slide readable, e.g., instead summarizing the desired point(s) in one or two lines. If there is a copyrighted diagram that is unacceptably small on a slide, it is often suboptimal but may be reasonable to provide a printed copy with time to explain it during the presentation.
 11. Use bullets, not sentences.
 12. Do not use whole sentences on a slide--instead list topics you will discuss.
 13. Remove nearly all articles from the slides. "The" and "a" are almost never needed. They add reading burden without useful information.
 14. Carefully evaluate prepositional phrases. They too are often able to be eliminated without loss of information. The goal is to place essential information on the slides. Useless or relatively useless words distract the reader from listening to you and they may get lost in the text.
 15. It is always a good idea to have someone else review your presentation to see if they identify errors. At minimum, review it on a completely different date so your eyes are a bit fresher to hopefully catch errors or lack of clarity.

Lastly, revisit the content to ensure the presentation meets your goal(s) and objectives. Confirm the length of the talk. Remember the 1 slide per minute rule. Jamming more slides in usually gives a rushed appearance. A better solution is to reduce the number of slides without sacrificing the evidence in support of those 3 main points. Be sure you incorporated sufficient time for questions and answers. Finish your presentation on time!

Appendix F: MSOH/MOH/PhD Oral Presentation Guidelines

Do's:

1. Make sure all electronics, adequate sound/microphones, lighting and room environment issues are satisfactorily addressed in advance. Assure the PowerPoint or other presentation materials are fully functional in that room's system.
2. Talk to the audience not to the screen. If there is no screen in front of the presenter on the podium and the screen is behind the speaker, there are approximately 3 options: i) know the presentation well enough such that only a glance at the screen is required prior to speaking to the audience, ii) have the PowerPoint slides printed out on paper and hold that for guidance to better facilitate speaking to the audience, and/or iii) use a separate computer screen to speak from on the podium even if not connected with the projector.
3. Seek to use a friendly, non-confrontational speaking style. Confrontational speaking styles may inadvertently occur when individuals either lack public speaking experience and/or have relatively low level of familiarity with the subject matter. Practice helps reduce these issues.
4. Make eye contact. Typically pick out a few individuals around the room to talk with as others will think you are talking with them too.
5. Consider judiciously, skillfully incorporating people in the audience into the talk if helpful. This should be cautiously done as it can be confrontational. However, examples include giving thanks to someone who has taught a major point is a strong positive.
6. Do use an anecdote(s). Listeners typically respond well, if not better to anecdotes than routine didactic material. Seek to use perhaps one or two in a 45-minute presentation. Avoid excessive use as it will detract from the main messages. One brief anecdote is typically sufficient for a 20-minute presentation. Some presentations, such as thesis defenses may not lend themselves to any anecdotes.
7. Do consider brief use of humor. Humor provides some variety that helps maintain attention. However, do avoid excessive or prolonged humor as it implies a lack of seriousness.
8. Do consider polling audiences or otherwise involve audiences in presentations, especially if beyond 20-30 minutes. This may not be reasonable for 20-minute presentations such as theses defenses. However, for longer presentations, audience involvement, polling for multiple choice questions, asking questions and seeking raised hands all encourage attention and improve learning with retention.
9. Students should refer to every slide at some point during the presentation. Use a laser pointer discretely, not continuously. Do not use the pointer to wander in circles over slides. Optimal use is to point to, or focus on a feature on a picture that cannot be readily described or to a specific topic you will discuss. Most of the time, the pointer should Not be used as it becomes a distraction. Continuous use is inappropriate.
10. Practice your presentation. Use a camera or phone to record your presentation one to three times. View the recording(s) to ensure your body language conveys confidence (no folded arms or hands tightly clasped in

front of the body), your voice is easily heard (no awkward pauses, mumbling, or too soft spoken to be heard), and there are no distracting ticks in your body language, eye contact, or speech (no stiffness or gesticulating gestures; no looking down or making eye contact to briefly or too long; no ums, uhs, etc.).

11. Be sure to do a final run-through the presentation the night before. Sleeping on it overnight seems to jell the presentation and facilitates a smoother, polished style.
12. Pace yourself. Know when you are approximately 1/3 or 1/2 way through the presentation and compare with the time allotment.
13. Give thanks to the audience for their time, input, help or other assistance as appropriate at the end of the presentation.

Don'ts:

1. Do not read word for word from a slide.
2. Do not use ums, uhs, heys, ya' knows, and other "space-fillers." It is better to not say anything and collect your thoughts than use a space filler that distracts and detracts.
3. Do NOT go over time. Time is money, and going over-time can be fatal for you, your thoughts, your proposal, your application and/or your program.

Appendix G: Guidelines for Use of Social Media

Use of social media is prevalent among students. OEH Programs students (includes MSOH/MOH/PhD and other RMCOEH-associated degree programs) should be aware that unwise or inappropriate use of social media can negatively impact educational and career opportunities. To avoid these negative impacts, students should consider the following:

- Post content that reflects positively on you and the University. Be aware not only of the content that you post, but of any content that you host (e.g., comments posted by others on your site). Content you host can have the same effect as content you post.
- Though you may only intend a small group to see what you post, a much larger group may actually see your post. Be aware that your statements may be offensive to others, including classmates or faculty members who may read the post.
- Employers and others may use social media to evaluate applicants. Choosing to post distasteful, immature, or offensive content may eliminate job or other opportunities.
- Once you have posted something via social media, it is out of your control. Others may see it, repost it, save it, forward it to others, etc. Retracting content after you have posted it is practically impossible.
- If you post content concerning the University, make it clear that you do not represent the University and that the content you are posting does not represent the views of the University.
- Make sure the content you post is in harmony with the ethical or other codes of your program and field. **In certain circumstances, your program may have made these codes binding on you, and violations may result in action against you.**
- If you are in a program that involves confidential information, do not disclose this information. **The University may take action against you for disclosures of confidential information. (Please note that this does apply widely in the OEH and other RMCOEH-associated degree programs.)**
- **Realize that you may be subject to action by the University for posting or promoting content that substantially disrupts or materially interferes with University activities or that might lead University authorities to reasonably foresee substantial disruption or material interference with University activities. This action may be taken based on behavioral misconduct, academic performance, academic misconduct, or professional misconduct, and may range from a**

- **reprimand or failing grade to dismissal from a program or the University.**

Instructions for the MSOH Project Research Concept Proposal and the Detailed Research Project Plan

1. First, identify an area for research.
2. Next, select three faculty members from the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH) for your research supervisory Committee. See Janet Torkelson, Programs Administrator, for the Supervisory Committee form.
3. The Supervisory Committee form must be completed and signed by all Committee members before a proposal will be formally considered.
4. After selection of your Supervisory Committee, schedule a meeting with your Committee Chair to discuss your project.
5. After discussing the project with your Committee Chair, prepare a 1-page research concept proposal.
6. The 1-page research concept proposal must not exceed 1 page. References and appendices are not required.
7. The font for the 1-page research proposal must be 11 or 12 point Times New Roman. Do not change the margins.
8. All sections of the 1-page research proposal must be completed; incomplete proposals will not be considered for approval.
9. Submit your 1-page proposal to your Committee Chair first. After finalization of the proposal and after approval from your Committee Chair, submit the 1-page research proposal to the other Committee members for their comments and recommendations.
10. If your research Supervisory Committee requests additional changes to the 1-page proposal, the proposal must be resubmitted to the whole Committee for approval.
11. Your research faculty Committee **MUST** approve the 1-page research proposal. Once approved, you need to prepare a detailed research plan for your project (usually 5 to 7 pages, and including for example, background information, method planned for data collection, reference list, etc.).
12. Approval of the detailed research plan must be obtained from your faculty Committee before research activities begin.
13. Figure 1 provides a check list for preparation of the 1-page research concept proposal and the detailed research plan, usually 5 to 7 pages, double spaced (see the student policy and procedures document for the format of this document).

Figure 1

The University of Utah MSOH Project Research Concept Proposal Checklist School of Medicine the Rocky Mountain Center for Occupational and Environmental Health

Please use this checklist in conjunction with the Step-by Step Instructions to assure that all requirements are fulfilled and turned in a timely manner.

Name of Student: _____

Date Submitted: _____

_____ Identify area or topic for research

_____ Complete and turn in the signed Supervisory Committee form

- Is the form signed by the Committee Chair?
- Is the form signed by ALL Supervisory Committee Advisors?

_____ Schedule a meeting with your Committee Chair to discuss your project

_____ Prepare a 1-page research concept proposal

_____ Submit your 1-page research concept proposal to your Committee Chair for approval.

_____ Submit the 1-page to the Supervisory Committee members for approval

_____ Submit a 5+ page research plan to all Committee members

_____ After approval of the 5+ research plan by your Supervisory Committee, begin research

_____ After completion of the project research, prepare the manuscript for submittal to a peer reviewed journal

For Office Use Only:

Received by: _____ Date Received _____