Department of Environmental and Occupational Health Sciences
University of Washington

ENVH 559A / INDE 567A / NSG 505A
APPLIED OCCUPATIONAL HEALTH AND SAFETY

Spring 2015
Tuesday 2:30-5:20
4225 Roosevelt Way NE, Suite 100, Room 2228

Course Faculty:

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Course Description:
The purpose of this course is to apply occupational health, safety, ergonomic and industrial engineering concepts through a combination of classroom discussions, consulting work, and site evaluations at selected companies in the Seattle area. Activities include working with Environmental and Occupational Health Sciences and Industrial Engineering faculty; and management, supervisors and employees at participating companies in order to identify work processes and workplace exposures; determine methods of assessment; collect, assemble, analyze, and interpret data; recommend controls, interventions, and production/process improvements; and present proposed solutions to company management via a written technical report and oral presentation.

Disability Notice:
Disability Resources for Students (DRS) offers resources and coordinates reasonable accommodations for students with disabilities. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. If you have not yet established services through DRS, but have a temporary or permanent disability that requires accommodations (this can include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu.

Academic Integrity Statement - Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity.

The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and the SPH Academic Integrity Policy. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington Community Standards and Student Conduct website

Course Objectives:

- Conduct a walkthrough evaluation of a selected company,
- Determine the need for workplace exposure assessment and control based on regulatory and worker health risk criteria,
- Determine the need for production or process improvements or changes,
- Use at least two of the following assessment methods: industrial hygiene, safety, ergonomic, industrial engineering techniques, productivity evaluation, production/process evaluation, or usability testing,
- Evaluate and interpret assessment results,
- Review and suggest implementation or modification to at least two of the following: workplace exposure controls, safety problems, company accident prevention plan or other written program, work environment design, process productivity, production/process methods, or product design,
- Integrate health and safety principles into production activities or workplace design,
- Explore ways to encourage change within an existing corporate culture,
- Discuss 'lean' concepts in relation to manufacturing processes,
- Prepare written consultation report,
- Present findings to company management, and
- Develop and manage a consulting project and project budget.

Course Requirements, Expectations, and Grading:

The purpose of this course is to give students an opportunity to implement the principles and techniques they are learning in their academic programs at an actual worksite as if they were a private consultant. Students will be responsible for identifying company client needs, developing a project plan (with budget and timeline), conducting exposure assessment or other evaluation to address stated problems, formulating recommendations for remediating problems, and writing a technical report. Students will also present their findings and recommendations to company officials at the end of the quarter at a mutually convenient time.

The technical report to the company should include an executive summary, a brief background of the company and its product(s), purpose of this project with identified problems, assessment methods, observations, results and findings, and recommendations. Reports should include a summation of the current status of controls and recommended controls. The report will be submitted to the company with a cover letter from the consulting team.

The student consultant team also will be responsible for developing and monitoring a budget for their project. Final budget accounting will be presented to ENVH 559 faculty along with final technical report at the end of the quarter.

Completing these projects will require a team effort with full participation from all members of each team. Student performance will be evaluated on class (10%) and fieldwork participation (20%), oral (20%) and written presentations (25%) to the participating company, and peer evaluations (25%). Peer evaluations will be completed
by each member of the student consulting teams and will include an evaluation of individual effort, use of skills and knowledge brought to the team, and technical, verbal, and written contributions.

ENVH 559/INDE 567 Course Schedule

Week & Date	Activity	Who
March 31	**Course overview** - Present participating companies - Identify consulting teams - Review consulting budget guidelines - Discuss protocols for site visits and observational methods	Faculty
Week 1	Make a marketing brochure for your consulting company that you will distributed to company client	Consulting team
April 7	**Review assessment tools and methodologies (sampling plan, organization, logistics, and data collection, management, and analysis)**	Cohen, Johnson
Week 2	Schedule and conduct initial walk-through of client company Marketing brochure presented to client company	Consulting team
April 14 Week 3	**Starting and running a consulting company**	Gleason
	Present and discuss project plans, assessment methods, budgets, and timeline Send project plan and "proposal" to the client company	Consulting team
April 21 Week 4	**Safety Audits**	Gleason
	Conduct on-site assessments Update faculty and class on progress	Consulting team
April 28 Week 5	**Issues surrounding introducing and implementing changes**	Faculty
	Conduct on-site assessments Update faculty and class on progress	Consulting team
May 5 Week 6	**Cost justifying solutions, competing costs for money within a business**	Johnson
	Conduct on-site assessments Identify and develop preliminary proposed interventions Update faculty and class on progress	Consulting team
May 12 Week 7	**Update faculty and class on progress**	Groups
	Conduct additional site visits if needed	Consulting team
May 19 Week 8	**Review elements of an effective presentation**	Johnson
	Develop final proposed interventions Update faculty and class on progress	Consulting team
May 26 Week 9	**Update faculty and class on progress**	Groups
	Draft final written report	Consulting team
June 2 Week 10	**Review technical report and final budget**	Faculty
	Practice project presentation to class Review and critique video of presentations	Consulting Teams
June 8-12	Presentation and submit final written reports to the participating companies	All

Budget Guidelines:

Students are responsible for developing and monitoring the budget for their team project. The proposed project budget will be presented with the project scope of work to the client company. The final budget accounting will be submitted to course faculty with the final technical report at the end of the quarter. Items to consider in developing your project budget are as follows:

- Billable hours of team members at $60/hour.
- Add 23% to billable hour charge for staff benefits.
- Each team member will not bill more than 8 hours per week on average at the $60/hour rate.
- Travel = $0.42/mile
- In addition to the course faculty, you are encouraged to consult with other DEOHS or Industrial Engineering faculty about your projects, but charge your project $200/hour for their time. Course faculty are billable at $200/hour for time outside of class.
- Add 25% on to your bottom line (total of billable hours and staff benefit costs) for administrative overhead.
- Equipment charges (others available on request):

Industrial hygiene equipment rental

Equipment	Cost per day ($)
Hi/low flow sampling pump	25
Sound level meter	30
Octave band analyzer	75
Noise dosimeter	25
EMF meter	25
Velometer	25
Light meter	15

Sampling Media (can be pro-rated)

Media	Cost
Filters (dust, metals)	$70/100
Sorbent tubes	$50/25
IOM sampler	$54/5
Silica filters	$43/50
Respirable cyclone	$10/each
Polynuclear aromatics	$160/50

Laboratory Analysis

Analysis	Cost
Organics	$65/ first analyte, $30 each additional
Metals	$25 first analyte, $13 each additional
Silica	$30/sample
Gravimetric	$5/sample
PAHs	$200/sample

NOTE: Analysis = Submit samples to Department of Environmental Health Laboratory.
Samples must be submitted with FRCG forms. Usual lab turn-around = two weeks.
Expedited lab order (<2 weeks turn-around) = double analysis prices.

Ergonomic equipment rental

Analysis	Cost per day ($)
Pinch meters, dynamometers	50
Inclinometers	150
Specialized analysis software	150
Electrogoniometers	200
EMG system	500
Computerized instrumentation (load cells, accelerometers, force-sensing devices)	300

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This course relies heavily on team effort. Past students indicated that they would like to have the opportunity to give feedback on the performance of their team members. Based on that recommendation, we would like each of you to evaluate and give a grade to each of your team members. Grades are to be noted numerically on a 4 point scale similar to academic grades (e.g., A = 4.0, B = 3.0, C=2.0, D=1.0,). When conducting this peer review consider participation with the group, individual effort, use of skills and knowledge brought to the team, and technical, verbal, and written contributions. Please email your numerical rating and any written comments to Pete (petej@u.washington.edu) by Friday, June 12th.

	Grade each group member on a 4-point grade point scale			
Group Member Name	**Group Participation**	**Individual Effort**	**Skills/Knowledge brought to team**	**Verbal and Written Communications**
1.				
2.				
3.				
4.				
5.				
6.				