

# Course Syllabus

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This is an introductory course covering evaluation and prevention of hazards due to physical hazards in the workplace. Hazards addressed include: noise, vibration, ionizing and non-ionizing radiation, and thermal stress. The course is intended mainly for upper division undergraduate and graduate students in environmental health, safety engineering, Industrial and Systems Engineering, and exposure sciences, including occupational hygiene. For each topic area, we will address basic physical concepts, health risks, measurement techniques, interpretation of guidelines and standards, and control techniques.

Learning Objectives: At the end of this course, the student should be able to:

1. Define characteristics of multiple physical agent exposures using appropriate terminology and units.
2. Calculate exposures to physical agents over time and energy levels (e.g., sound and electromagnetic frequency, particle energies).
3. Determine if exposures exceed current guidelines for acceptable exposure.
4. Explain how physical agents interact with human tissues or organs to produce changes associated with health outcomes.
5. Evaluate worker and community exposures to physical agents using common measurement tools and techniques.
6. Determine appropriateness of various personal protective devices for physical agents.
7. Describe and recommend alternative control techniques for physical agents.

## Course Summary:


Date	Details
Mon Mar 26, 2018	 <a href="#">Class 1 Preparation</a> ( <a href="https://canvas.uw.edu/courses/1217861/assignments/4140790">https://canvas.uw.edu/courses/1217861/assignments/4140790</a> ) due by 8am
	 <a href="#">Class 1 - Course Introduction to Physical Agents</a> ( <a href="https://canvas.uw.edu/calendar?event_id=1121254&amp;include_contexts=course_1217861">https://canvas.uw.edu/calendar?event_id=1121254&amp;include_contexts=course_1217861</a> ) 8:30am to 10am
Wed Mar 28, 2018	 <a href="#">Class 2 Preparation</a> ( <a href="https://canvas.uw.edu/courses/1217861/assignments/4140784">https://canvas.uw.edu/courses/1217861/assignments/4140784</a> ) due by 8am
	 <a href="#">Class 2 - MSD Risks and Hazards - Low Back</a> ( <a href="https://canvas.uw.edu/calendar?event_id=1121241&amp;include_contexts=course_1217861">https://canvas.uw.edu/calendar?event_id=1121241&amp;include_contexts=course_1217861</a> ) 8:30am to 10am
	 <a href="#">Class 3 Preparation</a> ( <a href="https://canvas.uw.edu/courses/1217861/assignments/4140785">https://canvas.uw.edu/courses/1217861/assignments/4140785</a> ) due by 8am

Mon Apr 2, 2018	 <a href="https://canvas.uw.edu/calendar?event_id=1121240&amp;include_contexts=course_1217861">Class 3 - MSD Risks and Hazards - Upper Extremities</a> <a href="https://canvas.uw.edu/calendar?event_id=1121240&amp;include_contexts=course_1217861">(https://canvas.uw.edu/calendar?event_id=1121240&amp;include_contexts=course_1217861)</a>	8:30am to 10am
	 <a href="https://canvas.uw.edu/courses/1217861/assignments/4140788">Class 4 Preparation</a> <a href="https://canvas.uw.edu/courses/1217861/assignments/4140788">(https://canvas.uw.edu/courses/1217861/assignments/4140788)</a>	due by 8am
Wed Apr 4, 2018	 <a href="https://canvas.uw.edu/calendar?event_id=1121239&amp;include_contexts=course_1217861">Class 4, Ergo Lab (due April 11)</a> <a href="https://canvas.uw.edu/calendar?event_id=1121239&amp;include_contexts=course_1217861">(https://canvas.uw.edu/calendar?event_id=1121239&amp;include_contexts=course_1217861)</a>	8:30am to 10am
	 <a href="https://canvas.uw.edu/courses/1217861/assignments/4140804">Problem Set 1 - Lifting Analysis</a> <a href="https://canvas.uw.edu/courses/1217861/assignments/4140804">(https://canvas.uw.edu/courses/1217861/assignments/4140804)</a>	due by 11am
Mon Apr 9, 2018	 <a href="https://canvas.uw.edu/courses/1217861/assignments/4140796">Class 5 Preparation</a> <a href="https://canvas.uw.edu/courses/1217861/assignments/4140796">(https://canvas.uw.edu/courses/1217861/assignments/4140796)</a>	due by 8am
	 <a href="https://canvas.uw.edu/calendar?event_id=1121248&amp;include_contexts=course_1217861">Class 5 - Ionizing Radiation, Fundamentals and external radiation protection/dosimetry</a> <a href="https://canvas.uw.edu/calendar?event_id=1121248&amp;include_contexts=course_1217861">(https://canvas.uw.edu/calendar?event_id=1121248&amp;include_contexts=course_1217861)</a>	8:30am to 10am
Wed Apr 11, 2018	 <a href="https://canvas.uw.edu/courses/1217861/assignments/4140797">Class 6 Preparation</a> <a href="https://canvas.uw.edu/courses/1217861/assignments/4140797">(https://canvas.uw.edu/courses/1217861/assignments/4140797)</a>	due by 8am
	 <a href="https://canvas.uw.edu/calendar?event_id=1121247&amp;include_contexts=course_1217861">Class 6 - Ionizing Radiation, Radiation protection/dosimetry, internal exposure, radionuclides</a> <a href="https://canvas.uw.edu/calendar?event_id=1121247&amp;include_contexts=course_1217861">(https://canvas.uw.edu/calendar?event_id=1121247&amp;include_contexts=course_1217861)</a>	8:30am to 10am
Mon Apr 16, 2018	 <a href="https://canvas.uw.edu/courses/1217861/assignments/4140798">Class 7 Preparation</a> <a href="https://canvas.uw.edu/courses/1217861/assignments/4140798">(https://canvas.uw.edu/courses/1217861/assignments/4140798)</a>	due by 8am
	 <a href="https://canvas.uw.edu/calendar?event_id=1121246&amp;include_contexts=course_1217861">Class 7 - Ionizing Radiation, Protection standards/regulations, radioactive waste, and instrumentation.</a> <a href="https://canvas.uw.edu/calendar?event_id=1121246&amp;include_contexts=course_1217861">(https://canvas.uw.edu/calendar?event_id=1121246&amp;include_contexts=course_1217861)</a>	8:30am to 10am
Wed Apr 18, 2018	 <a href="https://canvas.uw.edu/courses/1217861/assignments/4140786">Class 8 Preparation</a> <a href="https://canvas.uw.edu/courses/1217861/assignments/4140786">(https://canvas.uw.edu/courses/1217861/assignments/4140786)</a>	due by 8am
	 <a href="https://canvas.uw.edu/calendar?event_id=1121238&amp;include_contexts=course_1217861">Class 8 - Heat and Cold Stress</a> <a href="https://canvas.uw.edu/calendar?event_id=1121238&amp;include_contexts=course_1217861">(https://canvas.uw.edu/calendar?event_id=1121238&amp;include_contexts=course_1217861)</a>	8:30am to 10am
Mon Apr 23, 2018	 <a href="https://canvas.uw.edu/courses/1217861/assignments/4140777">Class 9 Preparation</a> <a href="https://canvas.uw.edu/courses/1217861/assignments/4140777">(https://canvas.uw.edu/courses/1217861/assignments/4140777)</a>	due by 8am
	 <a href="https://canvas.uw.edu/calendar?event_id=1121245&amp;include_contexts=course_1217861">Class 9 - Ionizing Radiation, Instrumentation and Measurement Demo (PS due April 30)</a> <a href="https://canvas.uw.edu/calendar?event_id=1121245&amp;include_contexts=course_1217861">(https://canvas.uw.edu/calendar?event_id=1121245&amp;include_contexts=course_1217861)</a>	8:30am to 10am
	 <a href="#">Problem Set 2 - Ionizing radiation</a>	due by 5pm

<https://canvas.uw.edu/courses/1217861/assignments/4140802>

 **Class 10 Preparation**  
<https://canvas.uw.edu/courses/1217861/assignments/4140789> due by 8am


Wed Apr 25, 2018

 **Class 10: Measurement and Stds**  
[https://canvas.uw.edu/calendar?event\\_id=1121237&include\\_contexts=course\\_1217861](https://canvas.uw.edu/calendar?event_id=1121237&include_contexts=course_1217861) 8:30am to 10am

 **Class 10, Take Home Midterm Exam**  
<https://canvas.uw.edu/courses/1217861/assignments/4140779> due by 11am


Mon Apr 30, 2018

 **Class 11 Preparation: Introduction to NIR part 1**  
<https://canvas.uw.edu/courses/1217861/assignments/4140781> due by 8am

 **Class 11 - Non-ionizing Radiation, Introduction**  
[https://canvas.uw.edu/calendar?event\\_id=1121244&include\\_contexts=course\\_1217861](https://canvas.uw.edu/calendar?event_id=1121244&include_contexts=course_1217861) 8:30am to 10am

Wed May 2, 2018


 **Class 12 Preparation Non-ionizing Radiation Part 2**  
<https://canvas.uw.edu/courses/1217861/assignments/4140782> due by 8am

 **Class 12 - Non-Ionizing Radiation, Measurement**  
[https://canvas.uw.edu/calendar?event\\_id=1121243&include\\_contexts=course\\_1217861](https://canvas.uw.edu/calendar?event_id=1121243&include_contexts=course_1217861) 8:30am to 10am

 **Problem Set 3 - Non-Ionizing Radiation**  
<https://canvas.uw.edu/courses/1217861/assignments/4140803> due by 11:59pm


Mon May 7, 2018

 **Class 13 Preparation**  
<https://canvas.uw.edu/courses/1217861/assignments/4140791> due by 8am

 **Class 13 - Noise, Introduction** ([https://canvas.uw.edu/calendar?event\\_id=1121253&include\\_contexts=course\\_1217861](https://canvas.uw.edu/calendar?event_id=1121253&include_contexts=course_1217861)) 8:30am to 10am

Wed May 9, 2018

 **Class 14 Preparation**  
<https://canvas.uw.edu/courses/1217861/assignments/4140792> due by 8am

 **Class 14 - Noise Measurement** ([https://canvas.uw.edu/calendar?event\\_id=1121252&include\\_contexts=course\\_1217861](https://canvas.uw.edu/calendar?event_id=1121252&include_contexts=course_1217861)) 8:30am to 10am

Mon May 14, 2018

 **Class 15 Preparation**  
<https://canvas.uw.edu/courses/1217861/assignments/4140793> due by 8am

 **Class 15 - Noise, Hearing Loss Protection Program**  
[https://canvas.uw.edu/calendar?event\\_id=1121251&include\\_contexts=course\\_1217861](https://canvas.uw.edu/calendar?event_id=1121251&include_contexts=course_1217861) 8:30am to 10am

Wed May 16, 2018

 **Class 16 Preparation**  
<https://canvas.uw.edu/courses/1217861/assignments/4140794> due by 8am

 [Class 16 - Noise Control \(https://canvas.uw.edu/calendar?event\\_id=1121250&include\\_contexts=course\\_1217861\)](https://canvas.uw.edu/calendar?event_id=1121250&include_contexts=course_1217861) 8:30am to 10am


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Mon May 21, 2018  [No Class - All Student Attending AIHce \(https://canvas.uw.edu/calendar?event\\_id=1132840&include\\_contexts=course\\_1217861\)](https://canvas.uw.edu/calendar?event_id=1132840&include_contexts=course_1217861) 12am

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Wed May 23, 2018  [No Class - Students Attending AIHce \(https://canvas.uw.edu/calendar?event\\_id=1132841&include\\_contexts=course\\_1217861\)](https://canvas.uw.edu/calendar?event_id=1132841&include_contexts=course_1217861) 12am


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Mon May 28, 2018  [Memorial Day Holiday, No Class \(https://canvas.uw.edu/calendar?event\\_id=1121255&include\\_contexts=course\\_1217861\)](https://canvas.uw.edu/calendar?event_id=1121255&include_contexts=course_1217861) 9am to 10:20am

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 [Class 18 Preparation \(https://canvas.uw.edu/courses/1217861/assignments/4140795\)](https://canvas.uw.edu/courses/1217861/assignments/4140795) due by 8am

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Wed May 30, 2018  [Class 18 - Noise Laboratory \(due June 6\) \(https://canvas.uw.edu/calendar?event\\_id=1121249&include\\_contexts=course\\_1217861\)](https://canvas.uw.edu/calendar?event_id=1121249&include_contexts=course_1217861) 8:30am to 10am

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 [Optional assignment \(https://canvas.uw.edu/courses/1217861/assignments/4140801\)](https://canvas.uw.edu/courses/1217861/assignments/4140801) due by 11:59pm

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 [Prob set 4. Noise Data Analysis \(https://canvas.uw.edu/courses/1217861/assignments/4140805\)](https://canvas.uw.edu/courses/1217861/assignments/4140805) due by 11:59pm

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Wed Jun 6, 2018  [Exam #2 \(https://canvas.uw.edu/courses/1217861/assignments/4140800\)](https://canvas.uw.edu/courses/1217861/assignments/4140800) due by 8:30am

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 [1. Noise Readings \(https://canvas.uw.edu/courses/1217861/assignments/4140769\)](https://canvas.uw.edu/courses/1217861/assignments/4140769)

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 [2. IR Readings \(https://canvas.uw.edu/courses/1217861/assignments/4140770\)](https://canvas.uw.edu/courses/1217861/assignments/4140770)

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 [3. NIR Readings \(https://canvas.uw.edu/courses/1217861/assignments/4140772\)](https://canvas.uw.edu/courses/1217861/assignments/4140772)

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 [4. Ergonomics Readings \(https://canvas.uw.edu/courses/1217861/assignments/4140774\)](https://canvas.uw.edu/courses/1217861/assignments/4140774)

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 [5. Thermal Stress Readings \(https://canvas.uw.edu/courses/1217861/assignments/4140776\)](https://canvas.uw.edu/courses/1217861/assignments/4140776)

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 [Class participation \(https://canvas.uw.edu/courses/1217861/assignments/4140799\)](https://canvas.uw.edu/courses/1217861/assignments/4140799)

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 [Take Home Midterm \(https://canvas.uw.edu/courses/1217861/assignments/4243412\)](https://canvas.uw.edu/courses/1217861/assignments/4243412)

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