



UNIVERSITY *of* LIMERICK
OLLSCOIL LUIMNIGH

WT 4301

Lecture I

Building and Construction

Syllabus



UNIVERSITY *of* LIMERICK
OLLSCOIL LUIMNIGH



Course Motto

**“I hear and I forget
I see and I remember
I do and I understand”**

Ben Franklin



Aims

- The focus of this Module is **Health, Safety and Wellbeing in Construction**
- This course aims to teach the;
 - Importance of HS&W to everyone at work
 - Discuss important issues that need to be addressed
 - Identify sources of additional information
- The module uses a large amount of material provided by the **Health & Safety Association (HSA)**
- The course is lecture based and anchored in the general construction discipline



Objectives

- **The main objective is to promote the skills of**
 - **Understanding the importance of HS&W**
 - **Building a Healthy and Safe work Environment**
 - **Keeping informed with up to date H&S information**
 - **Communicating H&S information; verbally & written**
- **Provide general guidance aimed at the prevention of occupational accidents or ill health.**
- **We will discuss the significant Acts and Regulations, however, it is not intended to provide a legal interpretation of the legislation.**



Learning Outcomes

- On successful completion of this module you will be able to:
 - **Aware of Scope of HS&W in Construction**
 - **Communicate the importance of H&S on Construction Sites**
 - **Locate information relevant to projects**
 - **Measure the risk potential of a construction project**
 - **Research and prepare a professional report on a construction related HS&W topic**
 - **Develop a Health and Safety plan for a construction project**
 - Identify and measure HS&W risks
 - Propose strategies to eliminate/reduce risks
 - **Effectively communicate the findings of your report in a public forum**



Exam Advice

- **Every aspect of the safety must be considered in the final exam**
- **You may be asked to address a topic that you reviewed on your own, for example,**
 - **We might cover working at heights**
 - **You might be asked to apply the method to working in a trench**
- **Aide Memoir (I will consider student input to the sheet)**
 - **Aide Memoir sheet will come with the exam paper**
 - **Students can NOT bring any material into the exam**



Grading

- **We will test your learning against;**
 - Knowledge
 - Comprehension
 - Application
 - Analysis
 - Synthesis
 - Evaluation

- **It is unlikely that a student that fails participate in the weekly classes will pass the course**



Lecturer Bias

- **Qualifications**
 - **BSc (honours) Physics**
 - **MEng**
 - **PhD**

- **Experience**
 - **Design Development and Deployment of Infrastructure**
 - **Test facility Design, Build and Operation**
 - **Sustainability in Built Environment**
 - **Refurbishment of Heritage Buildings**
 - **Commercial Management**
 - **15 working in United States of America**



Grading

- **10 % Project (marked out of 10):**
 - Preparation of a report on a selected project
 - Max of two pages. One page text & one page photos
 - Be prepared to present your report in front of your peers
 - Late submission (marked out of 5)
- **20% Quizzes (marked out of 20)**
 - Quizzes may be given without prior notice
 - Assessments carried out in class
 - Short answer format
 - No repeat
 - Must attend test at allotted time
- **70% Final Examination (marked out of 70)**
 - Four (4) questions,
 - Answer all four (4)
 - Two and half (2.5) hours
 - Memory aids not permitted
 - Students cannot bring any material into the exam



Repeat Process

- **10 % Project:**
 - Carry forward project result
 - Late submission (marked out of 5)
- **20% Quizzes**
 - Carry forward class result
 - Non repeatable
- **70% Repeat Examination**
 - Four (4) questions,
 - Answer all four (4)
 - Two and half (2.5) hours
 - Memory aids not permitted



Academic Honesty

- **The MST Department adheres to the strictest standards of academic honesty. An important aspect of achieving these standards is to be sure that students are aware of faculty expectations regarding academic honesty. This statement is an attempt to clarify these expectations as they apply to this course.**
- **Projects and Quizzes**
 - **Projects and Quizzes performed by students for submission serve the following two purposes:**
 - Are seen as educational devices to help students master the course material. This includes the concepts, theories, methodologies, and tools presented in class and recitation as well as such skills as working in teams.
 - Help the faculty evaluate how well each student has mastered the course material
 - **Thus, policies regarding academic honesty are intended to balance these two purposes and, unless otherwise stated, apply to all assignments**
 - **Students taking this class can work together to conceptualize general approaches to assignments. However, unless otherwise specified for a particular assignment, the work you submit must be done completely on your own. This includes text, numerical calculations, mathematical derivations, diagrams, graphs, computer programs and output. You are also expected to properly reference the source of any information used in a submission that is not your own. This includes any book, article, Web page, presentation or personal correspondence that you used for your work.**
 - **It is also inappropriate to use assignments, problem sets or projects submitted in previous years as a source, unless otherwise indicated.**
- **If you have any questions about how these policies relate to a specific situation, please speak to the teaching staff of this course for clarification**



Guest Speakers

- **I will have a number of guest lectures during the semester to talk about their experience in this area**
- **Attendance is mandatory**
- **If you have a particular issue to discuss we will try to oblige**



Additional Sources of Information

- **Health Safety Authority**
 - WWW.HSA.IE
- **Construction Industry Federation**
 - WWW.CIF.IE
- **Construction Safety Partnership Plan 2008-2010**
 - <http://www.cif.ie/asp/document.asp?target=../uploads/3555.pdf>



Reading Material

- **The construction Safety Handbook**
 - T. Curley, Oak Tree Press 2006, ISBN 1-904887-00-7
- **Guide to the Safety, Health and Welfare at Work Act 2005**
 - Health and Safety Authority (ISBN No. 1-84496-028-5)
- **Introduction to Health and Safety in Construction**
 - P. Hughes and E. Ferrett, Elsevier, ISBN: 978-1-85617-521-0
- **Safety, Health & Welfare at Work Law in Ireland: A Guide**
 - Raymond Byrne, nifast 2001, ISBN 1-899047-88-3



Questions

- **How many of you;**
 - **Worked on a construction site?**
 - **Know someone that was injured?**
 - **Know some one that was killed?**

 - **Have taken the FAS SafePass training?**
 - **Have had further training in H&S?**

 - **How many of you expect to work abroad?**
 - **How do you think this learning will help in that regard?**



Show Accident Images



What Motivates The Issue

1. Moral Case

2. Legislative Case

3. Financial/Business Case



1. Moral Case





Acceptable safety standards change over time



UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

Mike Keyes: Forensic Colloquium, 10th March 2008



Employers have a duty to provide safe access and egress !



UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

Mike Keyes: Forensic Colloquium, 10th March 2008

Moral Case

- **Employers have a duty to provide a safe place of work for persons constructing, maintaining and using our buildings**
- **Employers are in a position to make a difference**
- **The same applies to Clients**

Clients also have a responsibility



Legislative Case

- **Health & Safety Legislation is in the category of Criminal Law**
- **Breaches of H&S Legislation are criminal offences**
- **You cant insure your way out of a problem**
- **The core of the legislation is fairly straightforward**



Safety, Health & Welfare at Work Act 2005

Section 17 (2): A person who designs a project for construction work, so far as is reasonably practicable, that the project -

(a) is designed and is capable of **being constructed** to be safe and without risk to health.

(b) can be **maintained** safely and without risk to health during use.

(c) complies in all respects, as appropriate, with the relevant **statutory provisions**.



3. Business/Financial Case

- **Costs to individuals and companies of being sued for injury or death due to negligence in our design**
- **Consideration of the benefits of providing safe access for frequent maintenance activities when costed over the lifespan of the building:**
 - **Reduced access costs**
(often make up 20-35% of the overall job)
 - **Reduced labour costs**
(may account for a further 30%).
 - **Avoids potential disruption to on-going business**
 - **Quality of maintenance/repair work will be enhanced**



Financial / Business Case (cont.)

- Perhaps this case is best illustrated by the *1:5:100 Rule
- (Evans et al).

- The ratios represent costs for a typical commercial building (over its 50 year lifecycle):

- **1:** construction costs.
- **5:** maintenance & operational costs.
- **100:** business staff costs.



Course Outline



The Importance of HS&W

- **What is an accidents?**
- **Statistics**
 - **Fatalities**
 - **Injuries**
- **Implications**
 - **Employees**
 - **Employers**
 - **Projects**
- **What is to be done**
- **The Authority**



Safety and Health at Work: The Law in Ireland 2005 Act

- **General Duties**
 - Employers and Employees and Other Persons
- **How is the Legislation Structured**
 - 2005, Act
 - Regulations
 - General requirements
- **What the acts calls for**



The Safety Statement & Risk Assessment

- **The Safety Statement**
- **Assessing Risk**
 - Likelihood of that harm occurring
 - Potential severity
 - Number of people exposed
- **The risk index**



Overall View of Construction Regulations 1995

- **Duties at each stage**
 - Design
 - Construction
 - Implementation
- **Duties**
 - Employees
 - Employers
 - Visitors
- **When is a safety and health plan required**
- **Temporary Works**



Impact on Work

- **How do construction regulations impact work**
 - **General Building or Civil Engineering Work**
 - **Design and Build Contract**
 - **Residential development**
 - **Fitting out projects**
 - **Programmed maintenance**
 - **Local authority housing**
 - **Local authority road maintenance**
 - **Manufacturing plant**
 - **Other**



Construction Duty Holders

- **Client**
 - **Project Supervisor for Design Stage**
 - **Project Supervisor for Construction Phase**
 - **Contractor**
 - **Safety Officer**
-
- **Coordination of activities**
 - **Notification of construction work**



HS&W at work regulations 2001

- **Safe Pass**
- **Construction Skills Certification Scheme**
- **Welfare facilities**
- **Safety Representative**
- **Safety Officer**



Starting on Site

- **Duty Holders**
- **Training**
- **Site preparation**
- **Equipment**



Manual Handling

- **The problem with Manual Handling**
- **Why it should be avoided**
- **What to do when it can't be avoided**



Underground Services

- **Code of Practice**
- **Preparations**
- **Services**
 - **Gas**
 - **Electricity**
 - **Water**
 - **Communications**
 - **Sewer**
- **Safe Systems of Work**



Safety in excavation and confined spaces

- **Requirements**
- **Risk Assessment**
 - Access
 - Inspection
 - Barriers
 - Covers
 - Sinage
- **Common Hazards and dealing with them**
 - Dust
 - Water
 - Ventilation
 - Harmful gasses
 - Equipment



Working at heights

- **Requirements**
- **Risk Assessment**
- **Areas of concern**
 - **Ladders**
 - **Hoists**
 - **Falls**
 - **Falling Objects**
 - **Chutes**
 - **Scaffolding**
 - **Roof work**
 - **Trestles**
 - **Lifting Equipment**



Work equipment

- **Equipment**
 - **Screwdrivers to a road tanker**
 - **Cranes**
 - **Mobile plant**
 - **Renovators**
 - **Compressors**
 - **Ladders**
 - **Excavators**
 - **Generators**
 - **MEWPs**
 - **Fork lift**
- **Ergonomics**
 - **White finger to computer displays**



Chemicals and dangerous substances

- **Duty Holders**
- **Regulations**
- **Materials Covered**
 - **Lead**
 - **Asbestos**
 - **Solvents**
 - **Welding**
 - **Carcinogens**
 - **Silica dust**
 - **Gas cylinders**
 - **Abrasives**
- **Limit values**
- **Action Levels**
- **Waste disposal**



House Keeping

- **Housekeeping**
 - **Sharps**
 - **Waste**
- **Fencing**
- **Traffic**
- **Storage**
- **Office Working**
- **Security**



Welfare

- Lone Worker
- Non National workers
- Pregnancy
- Stress
- Mobile phones
- Sun Damage
- Dermatitis
- Cold



Communication and Coordination

- **Public Safety**
- **Visitor Safety**
- **Children on Site**

- **Harassment**
- **Alcohol and drugs**
- **Project and Site Work flow**
- **Coordinate principles of prevention**



Thank You



UNIVERSITY *of* LIMERICK
OLLSCOIL LUIMNIGH
