

# ENGR 152 – EXPLORATIONS IN ENGINEERING

## Course Syllabus

**Text:** INTRODUCTION TO ENGINEERING, 3<sup>RD</sup> ED., Paul H. Wright, John Wiley & Sons, ISBN 0-471-05920-X, 2002.

### Schedule for Spring 2006

#### January

<i>Lesson 1</i>	Media: Time:  Topic:	On-site instructional session @ Louisa County HS (Thurs. Jan. 19 <sup>th</sup> , 2:45 – 3:15 p.m.) @ Nelson County HS (Fri. Jan. 20 <sup>th</sup> , 1:45 – 2:45 p.m.) @ Green County HS (Mon. Jan. 23 <sup>rd</sup> , 1:45 – 2:45 p.m.) @ Orange County HS (Wed. Jan. 25 <sup>th</sup> , 1:45 – 2:45 p.m.) Questions & Answers
<i>Lesson 2</i>	Media: Time:  Topic: Assignment:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Students should complete this lecture between Wed. Jan. 25 <sup>th</sup> , 9 a.m. and Sun. Jan. 29 <sup>th</sup> , 4 p.m. <sup>1</sup> Course introduction Artifact Assignment given, PW Ch. 1 <sup>2</sup>
<i>Lesson 3</i>	Media: Time: Topic: Reading:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. Jan. 30 <sup>th</sup> , 1:50 – 3:00 p.m. Definitions – Engineering and Design PW, Ch. 2.1, 2.2 plus SR
<i>Lesson 4</i>	Media: Time:  Topic:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Students should complete this lecture between Tues. Jan. 31 <sup>st</sup> , 9 a.m. and Fri. Feb. 3 <sup>rd</sup> , 4 p.m. <sup>1</sup> History of Engineering

#### February

<i>Lesson 5</i>	Media: Time: Topic: Reading:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. Feb. 6 <sup>th</sup> , 1:50 – 3:00 p.m. Engineering Fields PW, Ch. 2.3-2.12
<i>Lesson 6</i>	Media: Time: Topic: Assignment: Reading:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Tues. Feb. 7 <sup>th</sup> , 9 a.m. – Fri. Feb. 10 <sup>th</sup> , 4 p.m. <sup>1</sup> Career Paths Artifact Assignment due PW, Ch. 2.13-2.27
<i>Lesson 7</i>	Media: Time: Topic:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. Feb. 13 <sup>th</sup> , 1:50 – 3:00 p.m. Team formation and performance

	Reading:	PW, Ch. 4.1-4.5 plus SR
<i>Lesson 8</i>	Media: Time: Topic: Assignment: Reading:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. Feb. 14 <sup>th</sup> , 9 a.m. – Fri. Feb. 17 <sup>th</sup> , 4 p.m. <sup>1</sup> Introduce case study problem <sup>3</sup> – teams Problem Def'n and Spec's Report (given) PW, Ch. 5.1
<i>Lesson 9</i>	Media: Time: Topic: Reading:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. February 20 <sup>th</sup> , 1:50 – 3:00 p.m. Engineering Method – overview PW, pp. 111-113
<i>Lesson 10</i>	Media: Time: Topic: Reading:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. Feb. 21 <sup>st</sup> , 9 a.m. – Fri. Feb. 24 <sup>th</sup> , 4 p.m. <sup>1</sup> External and internal searching PW, Ch. 5.2-5.3
<i>Lesson 11</i>	Media: Time: Topic:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. Feb. 27 <sup>th</sup> , 1:50 – 3:00 p.m. Reverse Engineering – the mind's eye of the engr. designer
<i>Lesson 12</i>	Media: Time: Topic: Assignment:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. Feb. 28 <sup>th</sup> , 9 a.m. - Fri. Mar. 3rd, 4 p.m. <sup>1</sup> Reverse engineering case study Problem Definition and Requirements Report due
<b>March</b>		
<i>Lesson 13</i>	Media: Time: Assignment: Topic:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Mon. Mar. 6 <sup>th</sup> , 9 a.m. – Wed. Mar. 8 <sup>th</sup> , noon. <sup>1</sup> Conceptual Design assignment (given) Technical drawing and communication
<i>Lesson 14</i>	Media: Time: Topic: Reading:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Wed. Mar. 8 <sup>th</sup> , noon - Fri. Mar. 10 <sup>th</sup> , 4 p.m. <sup>1</sup> Introduce Conceptual Design / Learning & creative thought PW, 4.6-4.16
<i>Lesson 15</i>	Media: Time: Topic: Reading:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. Mar. 13 <sup>th</sup> , 1:50 – 3:00 p.m. Conceptual design (concept classification and organization) PW, 6.5-6.13

<i>Lesson 16</i>	Media: Time: Topic:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. Mar. 14 <sup>th</sup> , 9 a.m. – Fri. Mar 17 <sup>th</sup> , 4 p.m. <sup>1</sup> Excel Primer I
<i>Lesson 17</i>	Media: Time: Topic: Reading:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. March 20 <sup>th</sup> , 1:50 – 3:00 p.m. Concept selection – Decision matrices PW, 5.4-5.5
<i>Lesson 18</i>	Media: Time: Topic: Assignment:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. Mar. 21 <sup>st</sup> , 9 a.m. – Fri. Mar. 24 <sup>th</sup> , 4 p.m. <sup>1</sup> Excel Primer II – engineering calculations Conceptual Design Report (due)
<i>Lesson 19</i>	Media: Time: Topic: Assignment:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. March 27 <sup>th</sup> , 1:50 – 3:00 p.m. Analysis – selection and design Preliminary Design assignment (given)
<i>Lesson 20</i>	Media: Time: Topic: Reading:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. Mar. 28 <sup>th</sup> , 9 a.m. – Fri. Mar. 31 <sup>st</sup> , 4 p.m. <sup>1</sup> Engineering calculations – estimation PW, Ch. 7
<b>April</b>		
<i>Lesson 21</i>	Media: Time: Topic:	On-site instructional session @ Orange County HS (Mon. April 3 <sup>rd</sup> , 1:45 – 2:45 p.m.) @ Louisa County HS (Wed. April 5 <sup>th</sup> , 1:45 – 2:45 p.m.) @ Nelson County HS (Mon. April 17 <sup>th</sup> , 1:45 – 2:45 p.m.) @ Greene County HS (Wed. April 19 <sup>th</sup> , 1:45 – 2:45 p.m.) Portrait of an Engineer
<i>Lesson 22</i>	Media: Time: Topic: Assignment:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. April. 4 <sup>th</sup> , 9 a.m. – Fri. April 14 <sup>th</sup> , 4 p.m. <sup>1</sup> Learning from failure – Challenger case study Preliminary Design Report (due)
<i>Lesson 23</i>	Media: Time: Topic:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. April 10 <sup>th</sup> , 1:50 – 3:00 p.m. Prototype design and testing / proof of concept
<i>Lesson 24</i>	Media: Time: Topic: Assignment:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. April 11 <sup>th</sup> , 9 a.m. – Fri. April 21 <sup>st</sup> , 4 p.m. <sup>1</sup> Economic analysis Final Presentation and Report assignments (given)

<i>Lesson 25</i>	Media: Time: Topic: Reading:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. April 24 <sup>th</sup> , 1:50 – 3:00 p.m. Professional engineering practice PW, Ch. 3
<i>Lesson 26</i>	Media: Time: Topic:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. April 25 <sup>th</sup> , 9 a.m. – Fri. April 28 <sup>th</sup> , 4 p.m. <sup>1</sup> Safety and product liability
<b>May</b>		
<i>Lesson 27</i>	Media: Time: Topic:	Through Horizon Wimba ( <a href="http://208.185.32.63/">http://208.185.32.63/</a> ) Mon. May 1 <sup>st</sup> , 1:50 – 3:00 p.m. (Horizon Wimba) Team Final Presentations
<i>Lesson 28</i>	Media: Time: Topic:	Through UVA's Blackboard System ( <a href="http://uvaonline.org">http://uvaonline.org</a> ) Available Tues. May 2 <sup>nd</sup> , 9 a.m. - Sun. May 7 <sup>th</sup> , 4 p.m. <sup>1</sup> Review and reflection
<i>Lesson 29</i>	Media: Time: Topic: Assignment:	On-site instructional session Friday May 5 <sup>th</sup> , 1:30 – 3:00 p.m. at UVA Demonstration of final working prototypes at UVA Final Design Report

### <sup>1</sup> Blackboard course content

While the content of the lectures housed on UVA's Blackboard course management system will be available all semester, each lecture includes interactive student content that students must complete during the time window shown on this syllabus.

### <sup>1</sup> Assigned Reading

Reading assignments are to be completed by the class date on which the assignment appears. **SR** = supplemental reading.

### <sup>2</sup> Team Project

Design a device to help elderly individuals with a challenging task.

Table of Assignment Schedule

Assignment	Value	Type	Date of Assignment	Due Date
Artifact Assignment	5%	Individual	Jan 25 (W)	Feb 10 (F)
Prob Defn and Reqts	15%	Team	Feb 14 (T)	Mar 3 (F)
Conceptual Design	20%	Team	Mar 6 (M)	Mar 24 (F)
Preliminary Design	20%	Team	Mar 27 (M)	Apr 14 (F)
Final Presentation	15%	Team/Individual	Apr 11 (T)	May 1 (M)
Final Design Report	20%	Team	Apr 11 (T)	May 5 (F)
Participation	5%	Individual	NA	NA

## Schedule Notes

### *Semester Start*

UVA            January 18th

### *Spring Breaks*

UVA            March 6-10

Greene        April 3-7

Nelson        April 3-7

Louisa        April 17-21

Orange        April 17-21

### *Final Exams*

UVA            May 4-12

### *Class Sessions*

Blackboard Sessions    14

Horizon Wimba        12

Live                      3

Total                     29