AMERICAN UNIVERSITY OF BEIRUT
DEPARTMENT OF ENGLISH

ENGLISH 206
FINAL EXAM
FALL 2002-2003

Name:_____ **Instructor:**_____

Passage A:

Ann Arbor, MI-

1. The engineers and health & safety staff at Lucent Technologies in Columbus, Ohio understand the importance of ergonomic design in terms of both productivity and employee health and safety. Teaming with Humantech ergonomists, the company intalled a new assembly line that reduces ergonomic risk for the operators, reduces product build time by 44%, and saves the company $1.2 million per year.
2. In late 1999, due to the nationwide increase in the volume of cellular phones, Lucent Columbus Works planned to ramp up production of an amplifier used at its mobile telephone base stations. The ULAM (ultralinear amplifier) weighs 35 pounds and had an original bench top assembly process of 40 minutes per unit. The process flow consisted of five different sub-assembly stations and a transfer cart. With increasing volumes, there were concerns about production yields as well as ergonomic challenges due to manual material handling. Process engineers recognized the need to promptly redesign the operation.
3. After identifying the line's challenges, engineers and health & safety staff enlisted the help of Humantech to define project goals and manage the implementation process. The team developed several concept drawings and applied ergonomic design guidelines to 'design out' heavy lifting, manual manipulation, etc. They searched for existing vendor solutions and ordered customized modifications. The final design included articulating arms for line loading and a custom conveyor that integrated the workstation components.
4. After the initial receipt and review of the equipment, it was clear that more modifications were necessary. Additional vertical supports were added to workstations and air-lift ball transfers and rollers were added to work surfaces to minimize transfer forces. Performance testing was then done at a fabrication shop. Operators, engineers, and health and safety specialists were able to identify additional improvements after several production runs.
5. When all modifications were made, the workstation components were shipped fully assembled and installed in place. Some of the final modifications included workstation mounted lighting, and easily adjustable footrests. The company began using the line in June of 2000.

6. The results of the new assembly line are indeed impressive—a 44% reduction in product build time (from 40 minutes/unit to 22.4 minutes/unit) as well as a 61% improvement in first test yields. It is estimated that the new line will save the company about 1.2 million dollars per year. Just as important, operators are very enthusiastic about the improvements.
7. Since 1979, Humantech has been guiding companies to success through ergonomics training, assessments engineering, and design services. With offices in Michigan and California, Humantech has a reputation for innovative problem solving and each project is lead by a Board Certified Professional Ergonomist. For more information about Humantech, please call 734-663-6707 or visit www.htec.com.

Passage B:

1. Many companies give lip service to the creation of an ergonomically designed, peaceful workplace. Whether from true concern about their employees' well-being or as a defense against possible legal action, such companies rattle on about preventing repetitive-strain injuries but ignore other aspects of the work environment.
2. Good seating, for example, is important for anyone who spends hours at a keyboard. Yet too many office workers still work in cheap secretarial chairs, then go home wondering why their backs hurt. The icon for better seating is the Herman Miller Aeron chair ($700 street). Big, customizable to individual body sizes, and indecently comfortable, this chair is great for all but the tiniest cubicles.
3. Lighting is also important. In addition to the overhead lighting from cold fluorescent banks in the ceiling, you need appropriate task lighting at your desk.
4. Your vision is important, too. I've previously written about special eyeglasses for working on a computer, and now I have hundreds of letters from readers who took my advice. They report much less eye strain with their new computer glasses.
5. When it comes to vision technology, I like the PRIO system, which allows the person performing your eye exam to produce a prescription optimized for computer work. PRIO equipment accurately simulates a computer a computer screen's visual characteristics, delivering a more accurate prescription for this task. The company's Web site, www.prio.com, will help you find an eye specialist in your area who uses PRIO equipment.
6. Background noise is a big problem in many offices. It's not healthy and destroys concentration. I'm not talking about the gentle babble of human voices. I'm referring to the much louder junk noises that disrupts many workplaces.
7. I've found a great solution that I often recommend to others who must work in noisy environments: the Bose QuietComfort Acoustic Noise Canceling headset ($300 street). This wonder device combines a very good audio headset with spectacularly good noise-detection and noise-countering circuitry. The difference is amazing. The headset is rarely offered at a discounted price, but they're well worth the cost.
8. Yet I don't wear the QuietComfort headset only at my desk, where I must concentrate. I also use them on airplanes, where the whoosh of the engines, crying

babies, and other passengers' conversations can be grim disruptions. Sometimes I plug mine into my Sony Discman and listen to music, but more often, I just enjoy the silence. I also use the headset for the Webcasts that I listen to several times a week: Why bother others with my PC audio? That's a key point: Don't make your workplace noisier than it is already.

9. If any of these answers appeal to you, ask a supervisor to get the company to pay for them. Increasingly, concerns about workers' on-the-job unease—and yes, the fear of lawsuits—make such ad-hoc arrangements possible.

Passage C:

1. At an unassuming motorcycle factory in Marysville, Ohio, big changes were taking place. A team of more than 12 people at the Honda facility created a simple system of two shafts and an air brake that dramatically improved quality, decreased process time, cut costs, and raised morale.
2. Challenged by a new motorcycle model that required multiple grinding operations on one fender, the team went to work. Standard workbenches in the area forced employees to rotate and maneuver bulky pieces, which required excessive back, wrist, and shoulder contortions. A large number of defects occurred in the parts, and process times soared.
3. One of the associates working in that area was a 5-foot-2-inch woman, another was a 6-foot-5-inch man. "So the ordinary workbenches at a standard 30 inches of height did not work," noted corporate Honda ergonomist Jose Banaag, who helped support the team.
4. A team was assembled to investigate safety and ergonomic concerns. Their solution: If the part's too bulky for operators to move, move the part to the operator with the help of an adjustable positioner.
5. With the new positioners in place, productivity doubled and scrap diminished 83 percent. Operators were required to make only two lifts, and to load and one to unload, instead of the 24 lifts necessary in the old method. There were immediate ergonomic benefits, including a minimal need for back, wrist, and shoulder bending among operators.
6. In addition to earning praise for the enhancements in production, associates at Honda were happy for another reason. Their design won the IIE Ergo Cup for workplace solutions at the Applied Ergonomics Conference in March.
7. "They were very proud of themselves," said Banaag. "They asked me to take a picture, and we had a sort of publicity tour for them to make sure all the other associates in the company knew that they competed and won the award for the company."
8. The Ergo Cup competition was created to recognize and encourage the development of ergonomic solutions in the workplace. Teams demonstrate their solution to a real-life work problem encountered in the previous 24 months. At this year's Ergo Cup contest, 14 teams competed for top honors in two categories—workplace solutions and education and training. Contest attendees voted on the entries they believed best applied ergonomic principles.

9. "It's a great way to get enthusiasm into the attendees because they really take their entry very seriously," commented conference co-chair Tim McGlothlin.
10. Also understandably enthusiastic was the Ergo Cup-winning team in the new education and training category—Ford Motor Co. of Dearborn, Mich.
11. According to Camille Major, a member of Ford's winning team, Ford employees perceived the training as a fun project. "In addition to all the benefits we knew about, now we [are] recognized by our peers," she said.
12. In an effort to educate manufacturing engineers at their assembly plants, Ford developed a program called "Putting Engineers on the Line." The three-day session reviewed basic ergonomic principles with the students before placing them on the production floor to work full shifts. Implemented successfully in five plants (Chicago, Norfolk, Va.; Louisville, Ky.; Wixom, Mich.; and Oakville, Ontario) with plans to expand the program to other facilities, the program educated more than 150 engineers about the importance of ergonomic considerations when designing solutions.
13. "It was a huge morale booster," Major said. "Overall, the end result was that everybody had a better understanding of each other's role and each other's function."

Passage D:

1. In an effort to minimize the possibility of injuries to operators at its Spring Hill, Tenn., facility, engineers at a Saturn assembly plant have developed an ergonomic tool handle for use by operators.
2. According to Saturn ergonomics engineer Gary Dumas, many plant operations require the use of heavy right-angle tools that are operated with two hands: one to hold the tool, the other to guide it. The new tool handle attaches to the mechanical end of a power tool used to secure fasteners.
3. The nature of assembly operations such as securing fasteners into magnetic sockets requires operators to wear gloves to protect their hands from cuts and other injuries. But because the operators' fingers get close to rotating sockets or extensions when securing fasteners, the gloves could potentially become caught in those sockets, resulting in injuries.
4. The lightweight tool, made of aluminum and plastic, provides a safe place for operators to put their guiding hand, keeping gloves and fingers out of harm's way.

Adapted from: - www.humantech.com
-Institute of Industrial Engineers, Inc.

English 206
Final Exam
Fall 2002-2003

Name:_____ **Section:**_____

Instructor:_____ **Time Allowed: $2^{1/2}$ Hours**

1. You are an ergonomics specialist at Humantech. You would like to see the operations of your company cover new markets such as Lebanon. After researching the Lebanese market and industry you learned that a new automotive plant, LibanAuto, has recently been founded. On your own initiative, you have established contact with the plant managers and engineers and visited the site to assess whether it complies with ergonomic design standards. The plant, you noted, had 50 operators who worked on the assembly line. Thirty of these workers assembled parts at workbenches, and twenty worked on assembling large parts and were in constant movement. You have concluded from your on-site observations that there wasn't much awareness or compliance with sound ergonomic design principles. As a result, workers were suffering from injuries and health problems, which in turn caused other defects.

Using the relevant ideas in passages A, B, C, and D, write to the plant CEO to propose remodeling the plant and the installation of a new assembly line that reduces ergonomic risk for the operators and observes sound ergonomic design principles. Note that though some of the information in the passages is about ergonomics in offices, it can be adapted to become applicable to an assembly plant. Use your discretion to supplement this information with needed details from your general knowledge.

A. Before writing the report, analyze the situation by answering the following questions briefly. (10 pts.)

a. Who are your primary readers? Are there secondary readers? If so, who?

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b. How much do your readers know about the topic and its related field?

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c. Noting that Lebanon has no clear ergonomic legislations that are legally binding to companies, analyze the ethical dilemma that this situation presents to managers at LibanAuto.

B. **Write your report. (50 pts.)**

a. Use the memo format and address it to Mr. John Smith, CEO of LibanAuto.

b. Write your report on page 3.

2. The format and message of the following draft letter need revision. Edit and rewrite this letter on page 7 to make it clear, correct, consistent, courteous, concise, etc. Note that there are no errors within the inside address or outside address; there may be errors in the layout, however. (40 pts.)

Donald Vizano
201 Edge Drive
Timmins, Ontario P9T

John Smith, Personnel Director
Martin & Koffman (M&K)
393 University Avenue
Toronto, Ontario M5R

I understand that M&K is making a major effort to build a full-scale equipment development laboratory. That prospect interests me greatly because of my educational background. At university, I took courses in several subjects that might be useful in the lab's work, and I worked as a lab monitor at Computer Services Company.

Also, related work at two firms has given me experience in electronics system. That is where I was informed by my ex-academic advisor about an electronic engineering opening at Martin & Koffman (M&K). He asked me to apply for the job. He thinks I am the man for this job. Therefore, I would like the opportunity to apply my knowledge at M&K. I have taken courses in microprocessor applications and fiber optics, and I have worked as an assembler at Jones Energy and Automation, Inc. While in college, I have also worked as a student assistant in the library.

Enclosed is a resume that highlights my credentials. I hope I will get the job though I realize that you probably have more experienced applicants to consider. I am sure you will make the right decision by selecting me if you know what is best for your company. Thank you for your offer and I look forward to working with you.

Sincerely

Donald Vizano

Attachment