Regulations and Standards applied to Design Requirement

Design Requirements:

(1) Specifications
(2) Standards, Codes, Regulations
(3) Socio-Cultural Constraints

EEC401 Senior Design I

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www.mwftr.com/SD1920.html

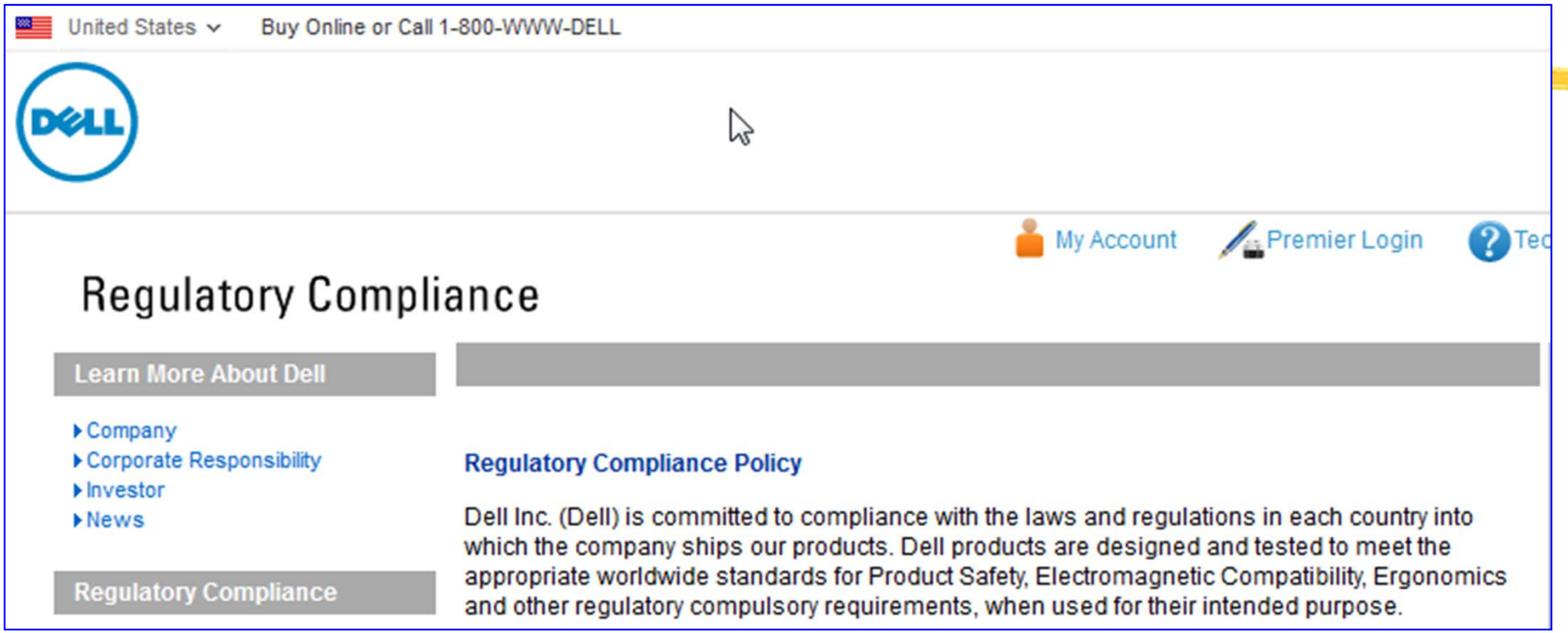
Regulatory Compliance

- **( )**: (a) an authoritative rule dealing with details or procedure; (b) a rule or order issued by an executive authority or regulatory agency of a government and having force of law
- **( )**: (a) the act or process of complying to a desire, demand, proposal, or regimen or to coercion; (b) conformity in fulfilling official requirements.

- **( )**: describes their efforts to ensure that they are aware of and take steps to comply with relevant rules, standards, and regulations [* Note: Revised/reworded from the Wikipedia description]

Standards & Regulation

- **Example**



- **Meet the standards for**
  - **Product Safety**
  - **Electromagnetic Compatibility (EMC)**
  - **Ergonomics**

Standards & Regulation

- EMC & ESD (Electrostatic Discharge)

Electromagnetic Compatibility

Dell products are designed, tested, and classified for their intended electromagnetic environment (domestic/residential environment or business/industrial environment). Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While all Dell computer systems have been designed and determined to be compliant with regulatory agency limits for EMC, there is no guarantee that interference will not occur in a particular installation.

Required statements for the international EMC specifications, marks and approvals, as obtained and documented on the product specific Product Safety, EMC and Environmental Datasheet, are provided in applicable agency/country language(s). Examples of EMC specifications include, but are not limited to, CISPR 22 and FCC Part 15.

Electrostatic Discharge

Dell products that have the CE marking are designed and tested for immunity to Electrostatic Discharge (ESD) to IEC standard 61000-4-2, CISPR 22, and CISPR 24. While these products have been designed and determined to be compliant with standard levels for ESD, there may be situations, such as low humidity levels, that can exacerbate ESD event occurrence. Users are encouraged to read and follow the ESD protection guidance provided within the Protecting Against Electrostatic Discharge section of this website.

- What are these?
  - **CISPR22**, **FCC Part 15**, **IEC 61000-4-2**, and **CISPR 24**.

Regulatory Compliance – Homework 1 (Individual)

- Write a *technical essay* on the following subject
  - Topic: What is FCC Part 15 Regulation?
  - Specific questions to be answered
    - What is this regulation for.
    - What are the subjects(products) it regulates.
    - How does it regulate or certify.
    - An example case (such as product recall or delayed product release to the market) in which the regulation played an essential role.

technical writing - initial frustration

It sound so stilted and dry! No first person ?!

Well, what it *I* am going to watch TV, am I supposed to say "See y'all later, there will be some hanging out while the TV is being watched?" No! I am going to say, "I am going to hangout and watch TV."

I know how to communicate with people; I've been doing it my entire life. My friends understand me fine. Why do I need someone to come in and tell me how to write?

How to write technical essay

- Technical Writing (Essay/Report) is NOT
  - A fiction nor creative writing
  - Casual conversation
  - A suspense/detective story

- Technical Writing (Essay/Report) IS
  - Information dissemination
  - Very different from how people normally speak and talk

Technical Writing Mechanics

- Correct grammar usage and spelling
- Being direct and concise
- Mechanics
  - Tense: Past, Present, and Future
  - Voice:
    - "We considered several designs." (1st person, active voice)
    - "The team considered several designs." (3rd person, active voice)
    - "Several designs were considered." (passive voice)
    - Most people agree that using 1st person is "bad."
    - General rule: Avoid first person unless it's very awkward to reword to 3rd person
    - Passive voice used to be the gold standard of technical writing – more people dislike passive voice because it can be wordy and it may hides accountability

Technical Writing Mechanics

- Voice:
  - Alternative: Active voice in descriptive sentences
    - "We decided to make a tubular tower. We rolled the paper into a tube and taped it shut. We then decided to support this tower with three legs made of very tightly rolled paper." (1st person, narrative sentence) – Avoid this example
    - "The tower consists of paper rolled into a tube. Three legs constructed from tightly rolled paper support this tube." (Voice is removed, descriptive sentence.) -- Better
  - **How to avoid 1st person**

Technical Writing Mechanics

- Voice:
  - Alternative: Active voice in descriptive sentences
    - "We decided to make a tubular tower. We rolled the paper into a tube and taped it shut. We then decided to support this tower with three legs made of very tightly rolled paper." (1st person, narrative sentence) – Avoid this example
    - "The tower consists of paper rolled into a tube. Three legs constructed from tightly rolled paper support this tube/" (Voice is removed, descriptive sentence.) -- Better
  - **How to avoid 1st person**

1st Person	**Possible Alternatives**
Our design consists of two FPGA chips	The design consists of two FPGA chips.
We tested our circuit.	The team tested the circuit. The circuit was tested
We meet to discuss the problem.	The problem was discussed. The team discussed the problem.
We used four sensors to detect obstacles in our design.	The team used four sensors to detect obstacles in their design. Four sensors detect obstacles.

Technical Writing Mechanics

- Correct grammar usage and spelling
- Being direct and concise
- Mechanics
  - Tense: Past, Present, and Future
  - Voice:
  - Word Usage
  - Avoid wordy phrases or sentences
    - "In the course of the event" → "During"
    - "Describe how the product did behave" → "Describe the product behavior"
    - "Come up with" → "Developed"
    - "The team ended up with a design" → "The final design consists of"
    - "The team carried out three experiments" → "The team conducted three experiments"
    - "As everyone knows, computers are .." → "Computers are.."
    - "The over is black in color" → "The oven is black"
    - "It is interesting to observe that five of ten .." → "Five of ten..."

Technical Writing Mechanics

- Correct grammar usage and spelling
- Being direct and concise
- Mechanics
  - Tense: Past, Present, and Future
  - Voice:
  - Word Usage
  - Avoid wordy phrases or sentences
  - “Avoid informal (slang, jargon) and conversational words and phrases

    “Three concepts made the final cut” → “Three concepts were selected”

    “The vehicle went haywire during testing” → “The vehicle performed unexpected during testing”

    “The team really messed up by using glue” → “The team’s decision to use glue cause the design to fail”

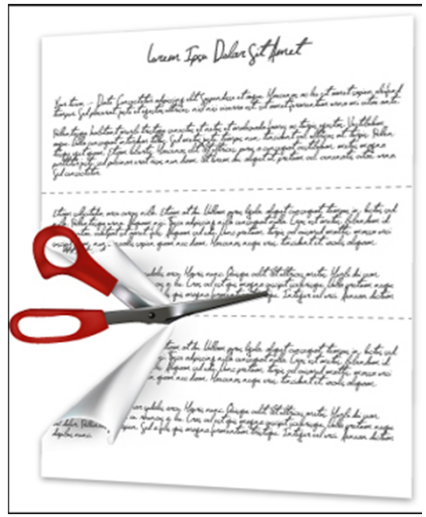
Technical Writing Mechanics

- Correct grammar usage and spelling
- Being direct and concise
- Mechanics
  - Tense: Past, Present, and Future
  - Voice:
  - Word Usage
  - Avoid wordy phrases or sentences
  - "Avoid informal (slang, jargon) and conversational words and phrases
  - Direct and to the point
    - "After learning that the glue was not sufficiently strong to hold the parts together, the team met to discuss options. One team member thought that the best option was to use nails. Another team member proposed a different type of glue. Everyone went off to test their ideas to fix the problem and the team met again the following day. Based on the newly completed tests, epoxy adhesive provided the strongest bond and dried in a short period of time" [80 words]
    - ***Better alternative?:*** After leaning that the glue was not sufficiently strong to hold the parts together, the team tested three possible remedies before deciding to use an epoxy adhesive. The epoxy was selected due to its strength and short drying time. [39 words]

How to write well for Senior Design class

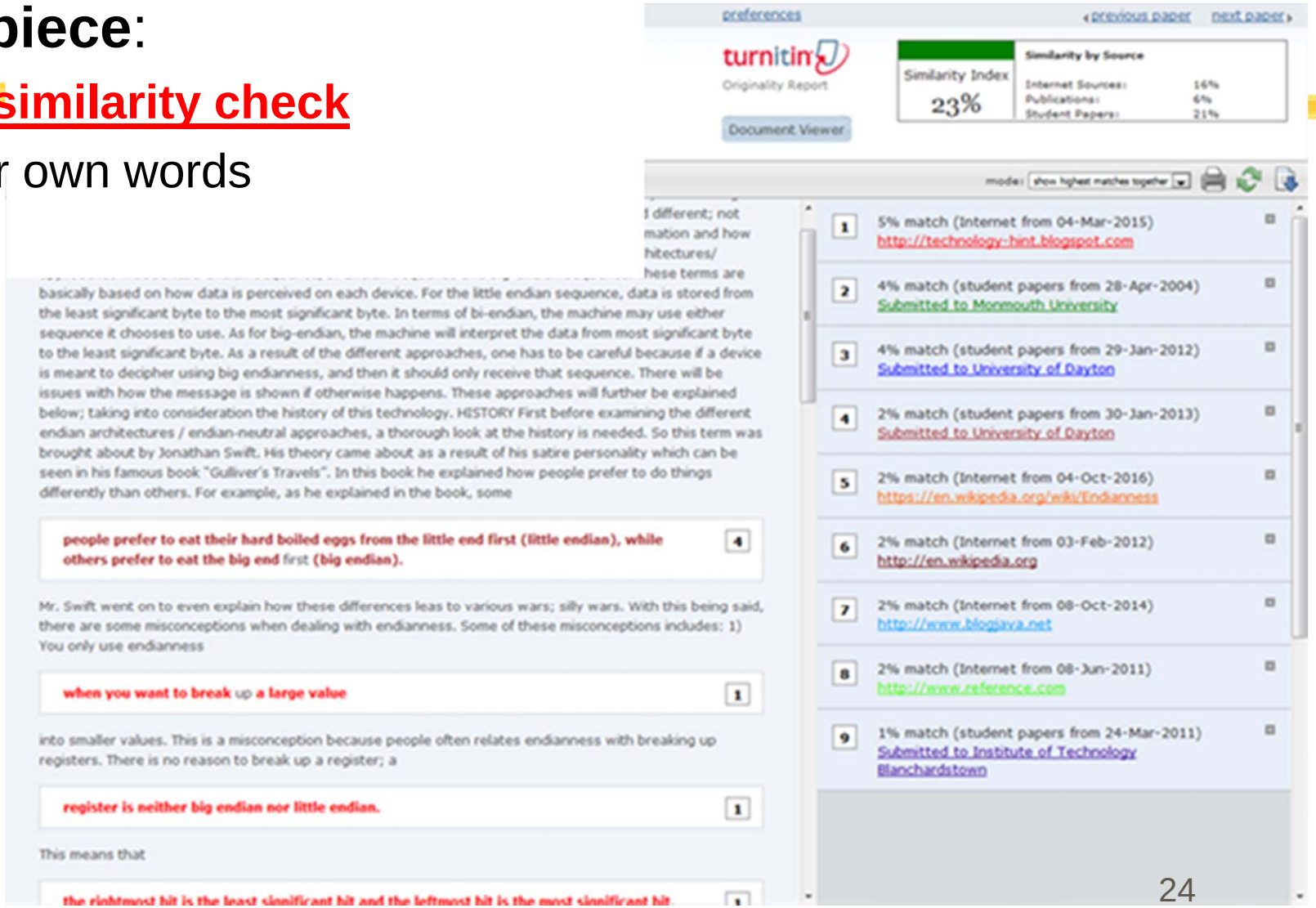
- People are more likely to read subjects/writings/emails that create curiosity or provide utility.
- When they are busy
  - Curiosity fades in importance
  - They read only the ones with practical importance ["utility"]

- So, write as if you are a staff writer (targeting for busy people) for a newspaper, and remember that you have an editor whose job is to cut your article to fit into a limited space, maybe just 1 inch in a column.
  - Important things [Conclusions and summary] in the first paragraph
  - Write your main body, then summarize it in to the first paragraph.
  - Your first paragraph should summarily answer all the questions



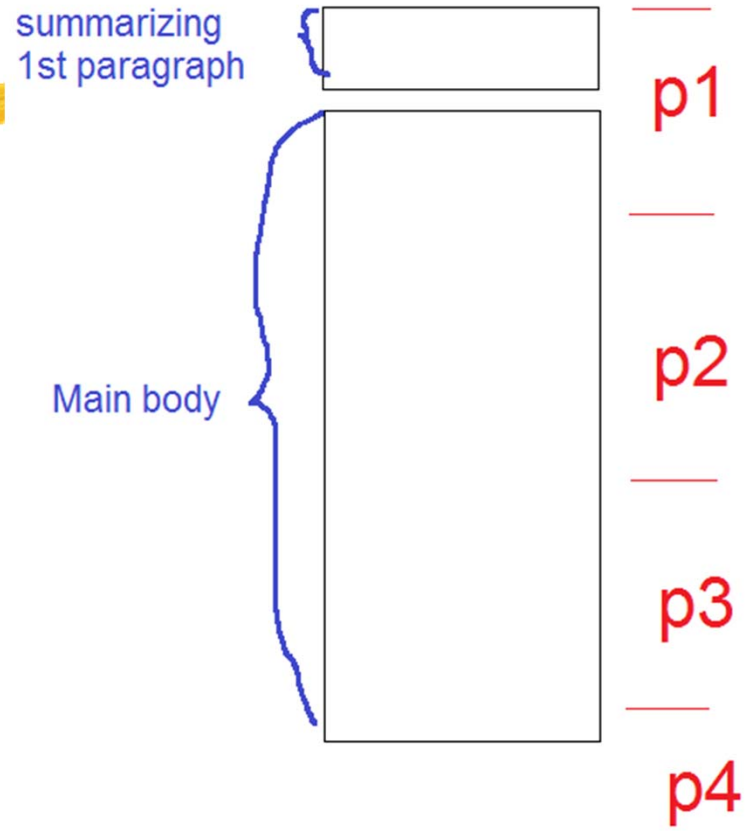
How to write well for Senior Design class

- **One last piece**:
  - *Turnitin* **similarity check**
  - Use your own words



HW1 and Grading

- Recap on HW1- Regulation and Regulatory Compliance
- Technical writing with emphasis on “utility”
- Topic: What is FCC Part 15 Regulation?
- Specific questions to be answered
  - What is this regulation for
  - What are the subjects(products) it regulates
  - How does it regulate or certify
  - An example case (such as product recall or delayed product release to the market) in which the regulation played an essential role.
- Grading
  - (x) Entire Report Score : 10 pts
  - (y) 1st Paragraph Score: 10 pts
  - (z) Similarity Score: [0 – 100%]
  - Final Score: (x + y - z)

Regulatory Compliance – Homework 1 (Individual)

- Submission Details on HW #1:
  - A docx/txt file which (1) summarizes the answer to the question in the first paragraph and (2) further details of the answer in the following paragraphs (main body).
  - Use complete sentences; **no** bullet itemization; **no** page limit; **no** images nor pictures – **text only**.
  - No cover page (your name and ID in the first line)
  - File format: MS Word (no pdf, please)
  - File name: "**HW1_lastname.docx**"
  - Due: M October 28 2019 – by 1:00pm (Email submission to ckim@howard.edu)