ARGUMENTATION

Explains what someone believes; showing the truth of a proposition
PERSUASION

Attempts to change an opinion; convincing people to act on what you have shown
PERSUASION
IN ENGINEERING

Convincing people to let you do things
WHAT THINGS DO ENGINEERS WANT?
ENGINEERS MIGHT WANT...

Money

Belief
ENGINEERS MIGHT WANT...

- Actions
- Permission
- Money
- Belief
ARGUMENTATION

Explains what someone believes; showing the truth of a proposition
ARGUMENTATION

Explains what someone believes; showing the truth of a proposition. Requires that you make a claim and support it.
PERSUASION

Attempts to change an opinion; convincing people to act on what you have shown.
WHAT’S THE FIRST CONSIDERATION IN PERSUASION?
AUDIENCE.
AUDIENCE.

(But what about them?)
THINGS TO KNOW ABOUT AUDIENCES

How much they know, predispositions, opinions, personalities ...
AUDIENCE CONSIDERATIONS

Organization
Tone
Level
Appeal
ORGANIZATION

“THEREFORE” ARGUMENTS

Facts/Data (Support), THEREFORE Assertion (Claim)
ORGANIZATION
“BECAUSE” ARGUMENTS

Assertion (Claim), BECAUSE Facts/Data (Support)
ORGANIZATION
“BECAUSE” ARGUMENTS

Assertion (Claim), BECAUSE Facts/Data (Support). Usually easier to follow.
RHETORICAL APPEALS

To Emotion

To Reason

To Ethics
APPEAL TO EMOTION

Tries to evoke feelings in favor of something, but without much rationality
APPEAL TO REASON

An appeal to rational argument; presupposes that your audience is rational
APPEAL TO ETHICS

An appeal to morality (arguments of right and wrong). Deal with what should be.
WHERE DO YOU SEE THESE TYPES OF APPEALS?
2011 Cheetos Construction Party Commercial  https://youtu.be/t_s8b1lzY5U
WHAT APPEALS DO ENGINEERS USUALLY MAKE?
RATIONAL OR ETHICAL.
ARGUMENTATION

The foundations of arguments are claims and support
CLAIM

An assertion that you believe to be true
CLAIM

An assertion that you believe to be true.

Claims without support are not arguments.
“SENSE” ARGUMENT

An argument that can be resolved with support one can sense or measure
"NON-SENSE" ARGUMENT

An argument that cannot be resolved with support one can sense or measure
EXAMPLES OF CLAIMS

The U.S. is a republic.
The Earth is a sphere.
The 1987 Ford Mustang weights 2,756 lbs.
J.K. Rowling is the most successful author of the past two decades.
EXAMPLES OF CLAIMS

The U.S. is a republic.
The Earth is a sphere.
The 1987 Ford Mustang weighs 2,756 lbs.
J.K. Rowling is the most successful author of the past two decades.
The richest author as of 2018.
The Harry Potter series is the best-selling book series in history.
Rowling has authored children’s books, adult’s books, plays, screenplays, and television miniseries.
WHAT IS MISSING FROM MY ARGUMENT?
Criterion based judgments are value-based judgments. You may need to convince audiences of the underlying premise before they will accept your conclusion.
TOULMIN MODEL

Accepted facts (data)  Conclusion

Warrant (statement that establishes relationship)
TOULMIN MODEL
IN TECHNICAL COMMUNICATION

Conclusion — Accepted facts (data)

Warrant (statement that establishes relationship)
EXAMPLES OF ARGUMENTS WITH WARRANTS

Seabiscuit was a horse. All horses have four legs, therefore Seabiscuit had four legs.
EXAMPLES OF ARGUMENTS
WITH WARRANTS

Last night Jones drove through the city at 145 mph. Driving at an extremely high rate of speed is reckless driving. Jones drove recklessly last night.
WHAT IS THE MISSING WARRANT?
The iPad Pro is portable. It weighs 1.03 pounds.
The Generac GP3250 electric generator is portable. It weighs 115 pounds.
DIFFERENCES IN AUDIENCES & ARGUMENTS

... require different kinds of proof
(Toulmin)
CLASSES OF WARRANTS

Authoritative  Motivational

Substantive
AUTHORITATIVE WARRANT

Depends on the assertion that a qualified authority would support the conclusion based on the evidence.
MOTIVATIONAL WARRANT

Depends on the audience’s values *(feelings)*: on what they believe or are inclined to believe.
SUBSTANTIVE WARRANT

Depends on the audience’s beliefs about the reliability of factual evidence.
SUBSTANTIVE WARRANT

Depends on the audience’s beliefs about the reliability of factual evidence. Cause/effect; sign; parallel case; analogy; generalization; classification.
WHAT WARRANT WOULD WORK?
Rodrick is cold; he’s shivering.
Janet will live to be at least 90. All of her parents and grandparents did.
WHAT TYPE OF WARRANT IS THIS?
Linus Pauling says that eating oranges will prevent colds, since they are a good source of vitamin C.
Robert Smith, a graduate student, plagiarized his doctoral thesis at State University. Over the last two years, nine graduate students at the university have been found guilty of plagiarism.
FAULTY OR BAD REASONING

BONUS MATERIAL. Skip to Slide 67 for a continuation of the material discussed during lecture.
Presuming what you have to prove.

*Example:* Tax money should be spent on useful enterprises, such as giving elementary school students laptops.
BLACK & WHITE DILEMMA

Presents the reader with only two alternatives when there are more. AKA false dilemma, either/or dilemma.
Conclusion is drawn before enough work has been done (not enough data)
POST HOC, ERGO PROPTER HOC

“After this, therefore because of this”: Assumes false cause and effect based on chronology
Neither premise conveys information about all members of the designated class. Example: All iPads are electronic devices. All TVs are electronic devices. Therefore, all iPads are TVs.
IRRELEVANT APPEAL

Appeal to authority that does not apply.
One thing that does not logically follow the other thing.

NON SEQUITUR
EQUIVOCATION

Defining terms differently to lead to a false conclusion. Example: Only man is rational. No woman is man. Therefore, no woman is rational.
PROPOSALS
Claims: You need a job done, I/we can do the job. Support: Here is proof that I/we can do the job
WHAT MIGHT YOUR CLAIMS BE FOR OUR PROPOSAL?
This would be a microprocessor-based toy.
A team of four can build a prototype of the toy.
The prototype can be completed in X weeks.
The toy could be economically produced.
The toy idea is educational.
The toy idea is marketable.
WHAT MIGHT YOUR PROOFS BE FOR OUR PROPOSAL?
Sufficient, relevant knowledge.
Sufficient, relevant experience.
Sufficient time.
Sufficient personnel.
PROPOSALS IN GENERAL

Contain Background; Details of Proposed Work; Explanation of Evaluation; Material, Personnel, Equipment; Explanation of Expertise; Budget (but not here)
BACKGROUND

Information needed by the audience to understand the details of the proposal. (Problem, criteria and constraints for solution)
DETAILS OF PROPOSED WORK

SPECIFIC TASKS

Explanation of how the proposed work meets the proposed objectives.
How the work will be completed.
When the work will be completed.
EXPLANATION OF EVALUATION

Telling the reader how to judge whether the work has been successful.
MATERIALS, PERSONNEL, & EQUIPMENT

Telling the reader how to what you require to complete the work.
EXPLANATION OF EXPERTISE

Telling the reader why you (or your team) can do the work.
SEE TC3 ASSIGNMENT SHEET FOR OUR SIMPLIFIED PROPOSAL STRUCTURE
ABSTRACTS

Brief summaries of reports that enable readers to decide whether a report will be useful, and whether they need to read part or all of it.
TYPES OF ABSTRACTS

Informative

Descriptive
INFORMATIVE ABSTRACT
*WHAT WE’LL USE IN THE PROPOSAL

A brief, mini-report; it gives the most significant material in the report, giving readers all essential information.
Little Toy Blue has launched a microprocessor-based, educational toy division and needs proposals for toys and prototypes that will demonstrate the toys’ feasibility. We propose to create a device that distorts the human voice when users speak on the telephone. The device would allow users to call others and sound like one of six celebrities whose vocal characteristics will be programmed into the device. We believe the device would be popular and novel, and our team of four could produce a prototype within six weeks for $50.