

# MEETING MINUTES

## Topic: Staff Meeting and Team Charter

Thursday, January 25, 2018

9:35 am – 10:50am, 11:10 am-11:30 am

Minutes recorded by  \_Jacob Barker\_\_\_\_\_

Attendees:  \_Jacob Barker, Samm Metcalfe, Ashley Shumaker (+David Willy, Amy Swartz)\_\_\_\_\_

Please bring:  \_Be ready to share past, present, and future work and ideas for approach\_\_\_\_\_

Table 1. Record of meeting.

<p><b>9:35 am to 9:50 am</b></p>	<p><b>Staff Meeting</b></p> <ul style="list-style-type: none"> <li>• Meeting with Mr. Willy and Amy</li> <li>• Recap of past/current/future work             <ul style="list-style-type: none"> <li>○ Discuss current project roles</li> <li>○ Need to create technical roles for each person                 <ul style="list-style-type: none"> <li>▪ Come up with generic cycle model, divide components</li> <li>▪ E.g. compressor, turbine, etc.</li> </ul> </li> </ul> </li> <li>• Requirements for project             <ul style="list-style-type: none"> <li>○ Must be presented in way that people understand what components are                 <ul style="list-style-type: none"> <li>▪ Transparent, cutaway, models/videos</li> </ul> </li> <li>○ The less original design, the more educational aspects needed</li> <li>○ Be able to record data                 <ul style="list-style-type: none"> <li>▪ E.g. rpm, torque, thrust force, current, etc.</li> <li>▪ Power a light bulb?</li> </ul> </li> </ul> </li> <li>• Possible approaches to design             <ul style="list-style-type: none"> <li>○ Natural Gas generating unit</li> <li>○ Rankine cycle                 <ul style="list-style-type: none"> <li>▪ Explore different working fluids</li> <li>▪ Combustion chamber                     <ul style="list-style-type: none"> <li>• Bunsen burner, heating element</li> </ul> </li> <li>▪ Model Nuclear power plant</li> </ul> </li> <li>○ Stirling Engine                 <ul style="list-style-type: none"> <li>▪ Alpha, Beta, Gamma configurations</li> </ul> </li> <li>○ Otto/Diesel Cycle</li> </ul> </li> </ul>	<p>Room 120</p>
<p><b>10:00 am to 10:30 pm</b></p>	<p><b>Team Meeting-further discussion of Charter</b></p> <ul style="list-style-type: none"> <li>• Project Goals             <ul style="list-style-type: none"> <li>○ Model needs to be educational, collect data</li> <li>○ Safe, durable, reusable, compact</li> <li>○ Long lasting, not single use</li> </ul> </li> </ul>	<p>Room 120</p>

	<ul style="list-style-type: none"> <li>○ Build something we can be proud of</li> <li>○ Get an A in the course</li> <li>• Team Purpose <ul style="list-style-type: none"> <li>○ Create a model that can facilitate classroom learning</li> <li>○ Improve learning experience</li> <li>○ Stakeholders <ul style="list-style-type: none"> <li>▪ Mr. Willy, ME faculty and students</li> </ul> </li> </ul> </li> </ul>	
<p><b>10:30 am to 10:50</b></p>	<p><b>Research Possible approaches</b></p> <ul style="list-style-type: none"> <li>• Rankine cycle model <ul style="list-style-type: none"> <li>○ Found youtube video of model Ranking cycle, looks very dangerous</li> </ul> </li> <li>• Otto/Diesel Cycle <ul style="list-style-type: none"> <li>○ Use parts from automotive AC compressor?</li> <li>○ Pneumatic piston engine?</li> </ul> </li> <li>• Brayton Cycle <ul style="list-style-type: none"> <li>○ Turbofan already been done before</li> <li>○ Not sure how we can realistically create a different model</li> </ul> </li> </ul>	<p>Room 120</p>
<p><b>11:10-11:30</b></p>	<p><b>Client Meeting with Mr. Willy</b>  ***Always ask client why, why, why?</p> <ul style="list-style-type: none"> <li>• Want something that can be during class <ul style="list-style-type: none"> <li>○ Could be used outside building, but preferably in class, mobile (on cart)</li> <li>○ Must be self-powered or use standard wall outlet</li> <li>○ Think about what you wish you could have seen when taking Thermodynamics</li> </ul> </li> <li>• Biggest Requirements <ul style="list-style-type: none"> <li>○ It works <ul style="list-style-type: none"> <li>▪ Needs to demonstrate some of the principles behind the cycle</li> <li>▪ Doesn't have to work exactly as it would in real life</li> </ul> </li> <li>○ It's scaled</li> <li>○ Need a means to acquire data</li> <li>○ Owner's manual or procedure sheet</li> <li>○ One of two routes: <ul style="list-style-type: none"> <li>▪ Model that functions to the point where data can be acquired and analyzed</li> <li>▪ Have robust software model than can be used to adjust variables and analyze performance <ul style="list-style-type: none"> <li>• Computational model of the system (MATLAB), be able to change variables to see how system performs</li> </ul> </li> </ul> </li> </ul> </li> <li>• Goals <ul style="list-style-type: none"> <li>○ Help students/better understand a thermodynamic cycle</li> <li>○ Be able to collect data—e.g. thrust, voltage, power</li> <li>○ Tactile <ul style="list-style-type: none"> <li>▪ Could be transparent, easily disassembled, etc.</li> </ul> </li> </ul> </li> </ul>	<p>Room 324C</p>

	<ul style="list-style-type: none"><li>▪ Maybe create two models, one functional and one that could be passed around class</li><li>○ Think of design as a laboratory experiment to be demonstrated in class<ul style="list-style-type: none"><li>▪ Look at experiments in ME 495 lab for ideas</li></ul></li><li>• Scope<ul style="list-style-type: none"><li>○ Three people-need to keep scope realistic and not too simple<ul style="list-style-type: none"><li>▪ If project gets too simple, goalpost will be moved to adjust</li></ul></li></ul></li></ul> <p>***Must reach decision on approach by next Tuesday (1/30). Seek approval at next client meeting during office hours</p>	
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