




Industrial and Management Systems Engineering vs EGEN 310

EGEN 310

Industrial and Management Systems Engineering

Discover				Communicate	
Define	Ideate	Prototype	Test		
<ul style="list-style-type: none">• <i>Background Research</i>• <i>Observation</i>• <i>Interaction with Stakeholders</i>	<p><i>Discoveries distilled into:</i></p> <ul style="list-style-type: none">• Functions (Verbs)  <ul style="list-style-type: none">• Objectives (Adverbs/Adjectives)  <ul style="list-style-type: none">• Constraints = standards, non-functional design boundaries	<p><i>Generate ideas for design concepts:</i></p> <ul style="list-style-type: none">• Functions to Morph Charts  <p><i>Diverging Design Space</i></p> <ul style="list-style-type: none">• Objectives to Pugh Charts <p><i>Converging Design Space</i></p>	<p><i>Build a prototype to begin to fill in gaps in design knowledge</i></p> <ul style="list-style-type: none">• Prototype ...<ul style="list-style-type: none">• To test most uncertain parts• If fundamental physical modeling is not possible• If statistical information is required• To learn about fit and tolerance of components• Long List of System Interfaces<ul style="list-style-type: none">• FMEA• System Integration		<p><i>Set up experiments and test to learn more about uncertain design aspects</i></p> <ul style="list-style-type: none">• Clearly identify variables in question• Define what constitutes an “effective” result• Summarize next steps
<ul style="list-style-type: none">• <i>Stakeholder interviews</i>• <i>Site visits</i>• <i>Process observation</i>• <i>Project objectives and metrics</i>	<ul style="list-style-type: none">• <i>Current state analysis</i>• <i>Data collection</i>• <i>Root cause analysis</i>	<ul style="list-style-type: none">• <i>Multiple ideas to address key project needs/root causes</i>• <i>Develop criteria tied to stakeholder needs</i>• <i>Quantitative evaluation wherever possible</i>	<ul style="list-style-type: none">• <i>Simulation models</i>• <i>Workstation mock-ups</i>• <i>SOP mock-ups</i>• <i>Layout Sketeches</i>• <i>Spreadsheet models</i>	<ul style="list-style-type: none">• <i>Analysis of proposed solution demonstrating objectives met or surpassed</i>• <i>Pilot implementation at client site</i>• <i>Business case/economic analysis</i>	<p><i>Utilize MANY forms of communication to inform your team, client and stakeholders about your design process</i></p> <ul style="list-style-type: none">• <i>Face to Face Meetings:</i> Team meetings (with/without instructor), client meetings, stand-up meetings• <i>Written Communication:</i> Statement of work, emails, technical reports, executive summaries• <i>Visual Communication:</i> visual planning board, charts, diagrams, layouts, visual work instructions• <i>Oral Communication:</i> Final Presentation