

Design – Year 4 (Foundations of Engineering)

Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject specific objective(s)	ATL skills	Content (topics, knowledge, skills)
Technological Inventions and Innovations	Communication	Innovation, Invention, Markets and trends	Scientific and Innovation -modernization, industrialization and engineering	Industrialization and engineering have created the need to learn about the history of technology and the important impacts inventions and innovations have made in the context of information and communication as well as advertising and marketing.	Inquiring and analyzing (A) Developing Ideas (B)	Research – Information literacy skills Understand and use technology systems Collect and analyze data to identify solutions and make informed decisions	<ol style="list-style-type: none"> 1. The History of Technology 2. Inventions and Innovations: An Evolutionary Process 3. The Role of Research Development 4. Advertising and Marketing Effects on Technology 5. Re-engineering a Backpack 6. Engineering a Solution for a Motor Disability
Process of Engineering Design	Systems	Perspective	Scientific and Innovation -systems, models, methods; products, processes and solutions.	Technological and engineering design challenges encompasses the need for systems, models, and methods to create solutions from different perspectives.	Inquiring and analyzing (A) Creating the solution (C)	Thinking – Critical thinking skills Practice observing carefully in order to recognize problems. Consider ideas from multiple perspectives. Propose and evaluate a variety of solutions	<ol style="list-style-type: none"> 1. Engineering Design Process 2. Criteria and Constraints 3. Design Principles 4. Prototype and Modeling 5. Collection, Processing, and Documenting Information 6. Applying the Engineering Design Process – Fluid Powered Car 7. Engineering Design Challenges – Robotic Stacker

The Design World	Development	Perspective, and Resources	<p>Scientific and Innovation</p> <p>-systems, models, methods; products, processes and solutions.</p>	<p>Engineering is developing systems, models, and methods as well as processes and solutions using the available resources and from a variety of perspectives.</p>	<p>Creating the solution (C)</p> <p>Evaluating (D)</p>	<p>Thinking – Creative thinking skills</p> <p>Practice observing carefully in order to recognize problems.</p> <p>Consider ideas from multiple perspectives. Propose and evaluate a variety of solutions.</p> <p>Identify obstacles and challenges</p>	<ol style="list-style-type: none"> 1. Energy and Power 2. Manufacturing 3. Construction 4. Information and Communication 5. Agriculture and Transportation Challenge 6. Telemedicine Challenge
Systems Engineering and Design	Systems	Innovation, Function, and Evaluation	<p>Scientific and Innovation</p> <p>-systems, models, methods; products, processes and solutions.</p>	<p>Engineering uses various models and methods of all available core technologies to create innovative solutions to properly maintain, troubleshoot, and analyze systems to ensure safe and proper function.</p>	<p>Developing Ideas (B)</p> <p>Creating the solution (C)</p> <p>Evaluating (D)</p>	<p>Thinking – Creative thinking skills</p> <p>Use brainstorming and visual diagrams to generate new ideas and inquiries</p> <p>Design improvements to existing machines, media and technologies</p> <p>Design new machines, media and technologies</p>	<ol style="list-style-type: none"> 1. Universal System Model 2. Core Technologies 3. Simple Machines 4. Electrical Fundamentals 5. Reverse Engineering Challenge 6. Engineering Systems Challenge

Design with CAD and CAD Systems	Systems	Perspective and Innovation	Scientific and Innovation -systems, models, methods; products, processes and solutions.	AutoCAD software design system incorporates various models and methods to create innovative approaches to solving challenges from a variety of perspectives.	Developing Ideas (B) Creating the solution (C)	Thinking – Transfer skills Apply skills and knowledge in unfamiliar situations Combine knowledge, understanding and skills to create products or solutions	<ol style="list-style-type: none"> 1. Sports Field and Logo Design 2. Shoe and Custom Wheel Design 3. Weekly Wardrobe and Brand Design 4. Multiview Drawings in Geometry 5. Park Design with Community Connection Challenge 6. Flag Design with Global Connection Challenge
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Subject group overviews **must** be complete even if not all units are complete. This is the window into your classrooms that the evaluators need so that they have a view of the entire year of learning and MYP connections. If your subject does not have all units complete, please see Ms. Forman to work on the Subject Group Overview and make sure that all requirements are met prior to the February consultant visit.