JSS 8-Week Syllabus

Week	Topics	Activities/Tasks	Resources *(link to these)*
1	Intro to JSS Design Process Vehicle Design	• View introductory JSS slideshow/video • Discuss hands-on design and design process • Discuss vehicle design and components • Brainstorm car concepts in small groups	• Introductory JSS slideshow/video • The Design Process • Basics of Model Solar Car Design lesson • Building a Basic Junior Solar Sprint Car PowerPoint
2	Applied STEM Concepts • Experiment with STEM principles relevant to wheels, axles, bearings, and chassis	• Class experiments on friction, stiffness and strength to weight ratio, wheel alignment, etc. • Class discussion of experimental results	• Investigating Model Car Materials lesson • Solar and Car Fundamentals PowerPoint (in resource links list)
3	Applied STEM Concepts • Experiment with STEM principles relevant to motors, transmissions and gear ratios	• Class experiments on torque and force, the effect of wheel diameter on transmission ratios, gear ratios, etc. • Class discussion of experimental results	• Transmission Investigation #1 lesson • Transmission Investigation #2 lesson • Friction Investigation lesson
4	Applied STEM Concepts • Experiment with STEM principles relevant to electric motors, electricity, photovoltaics, aerodynamics and car body shape	• Class experiments on solar panel output, motor output, effects of voltage/current input on motor output, air drag on difference body shapes • Class discussion of experimental results • Generate design criteria for vehicles • Groups develop car designs	• Understanding Solar Energy lesson • Sun's Angle Investigation lesson • Aerodynamic Shape Investigation #1 lesson • Aerodynamic Shape Investigation #2 lesson
5	Design Review &	• Groups present their designs and explain	• Design Review lesson

	Car Construction	choices • Conduct experiments to answer design questions • Discuss building materials and methods • Groups begin constructing their cars	
6	Car Construction	• Groups construct and test components of their cars • Rework components as needed, combining best features from various concepts	
7	Optimize Cars	• Groups present their final designs and explain choices • Complete construction • Conduct optimization experiments • Tweak components to optimize performance	• Design Review lesson
8	Race Cars & Debrief	• Discuss performance measures • Conduct final races • Discuss process and reflect on lessons learned	• Setting Up a Solar Car Race Teacher's Guide PowerPoint (in resource links list)