






Science Knowledge and Skills Needed for First Years Engineering Students By Edward Locke | Monday, July 17, 2023

This report is compiled from data available from Edward Locke's research reports at:
<https://suniseacreation.weebly.com/edward-lockes-innovation-deal-usa-21st-century-project.html>



Edward Locke's Innovation Deal USA in the 21st Century Project for an Interactive K12 Engineering Curriculum (IDUSA21-PIK12EC) Special Exhibition 2019

Edward Locke's reports on research outcomes on the topics of K-12 age-possible engineering and technology course content or topics




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
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

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


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Capstone Design, Research and Basic Skills Courses:

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Science Topics for Engineering			
Physics			Chemistry
Basic Concepts	Electrical and Thermal	Electrical Devices:	
1. [Newton's 1 st , 2 nd and 3 rd Laws] 2. [mass] 3. [acceleration] 4. [force] 5. [gravity] and [weight] 6. [velocity] (linear and angular) 7. [speed] 8. [speed of sound] 9. [speed of light] 10. [rate] 11. [time] (hour, minute, second), [frequency], 12. [density] 13. [torque] 14. [motion] (forward, backward, left, right, linear, pivoting, rotational) 15. [vibration] 16. [moment of force] [energy] 17. [work] 18. [pressure] 19. [power] 20. [stress] 21. [strain] 22. [friction] 23. [momentum] 24. [potential energy] 25. [Reynolds Number] 26. [1 st moment of the area] 27. [2 nd moment of the area] 28. [Dimensional Analysis] 29. [entropy] 30. [wave]	1. [dielectric] [piezoelectric] 2. [heat] 3. [luminous intensity] 4. [circuitry] [magnetism], 5. [wavelength] [Ohm's Law] (voltage, current, resistance) 6. [current flow] (I/O or input/output) [electronic schematics] [schematic symbols] 7. [current] (AC, DC) [calibration] [navigation] 8. [signal pulse] [frequency] 9. [temperature] [specific heat] [thermal conductivity] 10. [conduction] (electrical and thermal)	1. [plug] 2. [power switch] [capacitor] [resistor] 3. [sensors] [microcontroller] [LED, or light emission diode] [anode] 4. [cathode] 5. [battery] 6. [terminal] 7. [servo] 8. [transistor] [phototransistor] [oscilloscope] [piezospeaker] [whisker] [antennae] 9. [light] (fluorescent, incandescent, halogen, infrared)	1. [atomic structure] [chemical reactions] [chemical symbol] 2. [periodic table] 3. [chemical equation] 4. [viscosity] 5. [specific heat] 6. [temperature] 7. [absolute temperature] 8. [gas/liquid] 9. [Ideal Gas Law] 10. [intermolecular cohesive force] 11. [molecule]
Total numbers of science topics to be embedded into mathematics review:			
Physics: 49			Chemistry: 11