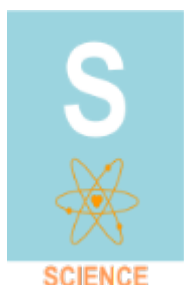


STEM/STEAM & The Movie SCIENCE



SCIENCE	FILM(S) REFERENCED	CONCEPTS
The science behind 'Oppenheimer'	Oppenheimer	Physics Quantum mechanics
Super Hero Physics THE "MARVEL"-OUS NATURE OF SCIENCE: Using superhero movies to teach methods and values in science (Science Teacher July 2019) Movie sciences & instructional prompts	References to graphic novels rather than films Iron Man, Captain America, Thor, Black Panther, Ant-Man, Avengers and Guardians of the Galaxy.	Many nature of science,
The Science (and the Scientists) Behind "The Antman"	Antman & The Wasp Annihilation Jurassic World Thor:Ragnorok Black Panter Iron Man	molecular density molecular misequilibrium quantum decoherence organic atom reduction
Jurassic World: Skimps on Dinosaur Science	Jurassic World	
The Science Behind Pixar (exhibit, lessons)	All Pixar films	Many

<p>Science of 3D Movies: How do images on a flat screen pop out?</p>		<p>depth perception; stereoscopic vision; polarized light</p>
<p>Visible invisibility: the science of cinematography</p>	<p>Saving Pvt Ryan Citizen Kane Vertigo Pulp Fiction Ben Hur Lawrence of Arabia A Space Odyssey Tangerine The Hateful Eight</p>	<p>exposure time chemicals resolution</p>
<p>The Future Science of Star Wars</p>	<p>Star Wars</p>	
<p>The Science in "The Martian"</p>	<p>The Martian</p>	<p>ion engines, orbital dynamics, interplanetary travel, chemistry, solar energy</p>
<p>The Physics of "Back To The Future"</p>	<p>Back To The Future</p>	<p>special relativity photons general relativity</p>
<p>How Science Helps Create Realistic Explosions in Movies</p>	<p>Avatar, Iron Man 3, Super 8, Man of Steel</p>	<p>wavelet turbulence</p>
<p>Physics Journal Recommends Teachers Use Interstellar</p>	<p>Interstellar; Star Trek; Stargate</p>	<p>Wormholes; black holes</p>

<u>Stunts Makes A Believer of Physics Expert</u>	Fast & Furious 7	speed; terminal velocity; momentum
<u>Neuroscientist Takes A Scientific Look at Art of Filmmaking</u>	Airplane, Chicago, Moulin Rouge	Brain Science
<u>The Physics of Spiderman's Webs</u>	Spiderman	downward gravitational force; upward force; momentum; tension; velocity; kinematic equations;
<u>Science Goes To The Movies</u>	Various	Varies
<u>Great & Realistic Physics Movies</u> related: <u>Good & Bad Examples from Movies</u> (video)	Gravity, Apollo 13, October Sky, The Abyss, IQ, Infinity, 2001: A Space Odyssey	

<p>Science of Hollywood Stunts (video)</p>	<p>The Firm; A Time to Kill; Spiderman; Mission Impossible;</p>	<p>solid, liquids, gas, steam, expansion, chemical reactions, metal, hydrocarbon, fluids, carbon, refraction, atoms, gravity, compression, pulleys, force, direction, load, friction, vectors, pressure, electrical circuits, magnet</p>
<p>Physics in Wall-E</p>	<p>Wall E</p>	<p>Applied Physics, Gravity</p>
<p>Interstellar Film Technology & Black Holes The Surprising Science Behind Interstellar Christopher Nolan/Kip Thorne Discuss Physics of Interstellar</p>	<p>Interstellar</p>	<p>Black Holes, Worm Holes, Caustics, Relativity</p>
<p>Movie Magic Conjured by Science</p>	<p>Toy Story, Harry Potter, Hellboy, Quantum of Solace, Chronicles of Narnia, Tron</p>	<p>Fluid Dynamics</p>

<p>Science of the Movies in 3D (Video)</p>	<p>Terminator 2; Metalstorm, Journey to The Center of the Earth</p>	<p>Stereo, Depth, Polarization, Light Waves</p>
<p>How Movies Makers Use Science to Make Magic</p>	<p>The Incredibles, Jurassic Park, Benjamin Button, Avengers, Pirates of the Caribbean, My Week With Marilyn, The Ten Commandments, Avatar</p>	<p>Visual effects, CG, third-degree polynomials, higher frame rates, 3D, linear perspective, aerial perspective, composition,</p>