

Electric Vehicle Revolution

Overview

EVs are coming – ready or not. Electric cars predate internal combustion engines. Clara Ford found her husband's product dirty and noisy and drove a succession of Detroit Electrics from 1908 to 1914. The course emphasizes battery electric vehicles but touches on plug-in hybrids. Topics include: (1) EV history, (2) Pros and cons of ownership, (3) Barriers to adoption – real and over hyped, (4) environmental impact, (5) science behind their efficiency, and (6) evaluation of available EVs.

Course Outline

1. The history of electric vehicles from the 1830's to today
2. Pros and cons: Is an EV or plug-in hybrid right for you?
 - 2.1. High initial cost
 - 2.2. Low operating costs
 - 2.3. Low routine maintenance costs
 - 2.4. Range anxiety
 - 2.5. Where can you charge your EV?
3. Barriers to wide adoption
 - 3.1. Fear of Li-Ion batteries; safety and replacement cost
 - 3.2. Vehicle fire statistics for hybrids, gas burners and electric cars – you might be surprised
 - 3.3. Crash safety ratings
4. Environmental impact over vehicle lifetime
 - 4.1. Mining lithium and rare earth metals
 - 4.2. Battery manufacturing
 - 4.3. Battery disposal and recycling
 - 4.4. Carbon footprint of electric generation
5. The science behind EV efficiency
 - 5.1. What is MPGe?
 - 5.2. Regenerative braking
6. More EV models are becoming available – how do you choose?
 - 6.1. Range
 - 6.2. MPGe and efficiency
 - 6.3. Charging options