

FOURTH YEAR ELECTIVE COURSE

MCG 4126 - ENERGY CONVERSION

Outline

1. **Introduction** - energy supply and demand
2. **Fuels and Combustion** - fossil fuels, synthetic fuels, combustion calculations, combustion-generated air pollutants and their control
3. **Heat Exchange** - heat exchanger design considerations, steam generators, direct contact heat transfer
4. **Refrigeration and Heat Pumping** - vapour compression cycles, absorption cycles (lithium bromide, aqua-ammonia), heat pumps, heat transformers, other cycles
5. **Cogeneration and Energy Conservation Techniques in Industry** - cogeneration (combined heat and power generation), integration into chemical and other processes, waste heat recovery, industrial examples
6. **Solar Energy** - calculation of insolation, collector design, simple systems
7. **Nuclear Energy** - basic principles, the CANDU reactor

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