CURRICULUM CONTENT

1. Equilibria
   - Chemical equilibria: reversible reactions; dynamic equilibrium
   - Factors affecting chemical equilibria
   - Equilibrium constants
   - The Haber process; the Contact process

2. Redox reactions
   - Describe and explain redox processes in terms of electron transfer and/or changes in oxidation number (oxidation state)
   - Calculation of oxidation number

3. Group 7, the halogens
   - The similarities and trends in the physical and chemical properties of chlorine, bromine and iodine.
   - Characteristic physical properties
   - The relative reactivity of the elements as oxidising agents
   - Some reactions of the halide ions
   - The manufacture of chlorine
   - The reactions of chlorine with aqueous sodium hydroxide
   - The important uses of the halogens and of halogen compounds

4. Group 2, the alkaline earth metals
   - Similarities and trends in the properties of the Group II metals magnesium to barium and their compounds
   - Some uses of Group II compounds

5. The extraction of metals
   - Describe the ease in obtaining metals from their ores by relating the elements to the reactivity series
   - Describe the essential reactions in the extraction of iron from hematite
   - Describe the conversion of iron into steel using basic oxides and oxygen
6. Haloalkanes

- Halogenoalkanes
- Nucleophilic substitution
- Hydrolysis
- Formation of nitriles, primary amines
- Elimination
- Relative strength of the C-Hal bond

7. Alkenes

- Alkenes (exemplified by ethene)
- Addition and oxidation reactions
- Industrial importance

8. Alcohols

- Alcohols (exemplified by ethanol)
- Reactions of alcohols:
  - combustion
  - substitution to give halogenoalkanes
  - reaction with sodium
  - oxidation to carbonyl compounds and carboxylic acids
  - dehydration to alkenes
  - Ester formation
- Classify hydroxy compounds into primary, secondary and tertiary alcohols
- Suggest characteristic distinguishing reactions, e.g. mild oxidation

9. Analytical techniques

- Describe some analytical techniques:
  - the infra-red spectroscopy
  - the infra-red spectrometer