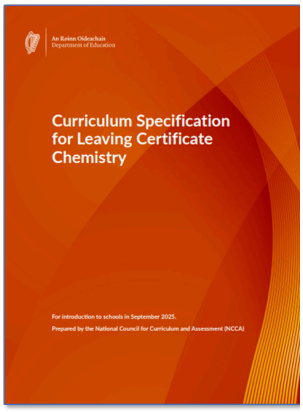
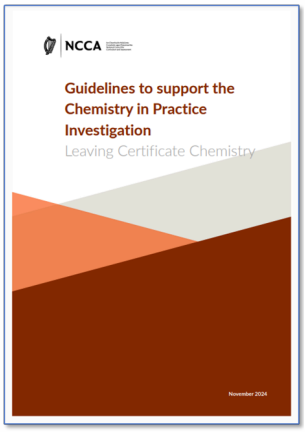
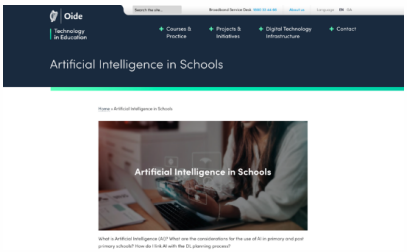
Oide
Tacú leis an bhFoghlaim Ghairmiúil i measc Ceannairí Scoile agus Múinteoirí
Supporting the Professional Learning of School Leaders and Teachers

# Senior Cycle Chemistry Professional Learning Booklet Day 2 - 2024/25




Webwise AI Hub

# Chemistry Specification Analysis

| | |
|---|---|
| **New Emphasis** | |
| **Expert Group Discussion** | |
| **Learning Outcomes I am looking forward to engaging with** | |

# Key Messages from Strand Overview

| | |
|---|---|
| **Discuss** | offer a considered, balanced review that includes a range of arguments, factors or hypotheses; opinions or conclusions should be presented clearly and supported by appropriate evidence |
| | |
| **Analyse** | study or examine something in detail, break down in order to bring out the essential elements or structure; identify parts and relationships, and to interpret information to reach conclusions |
| | |

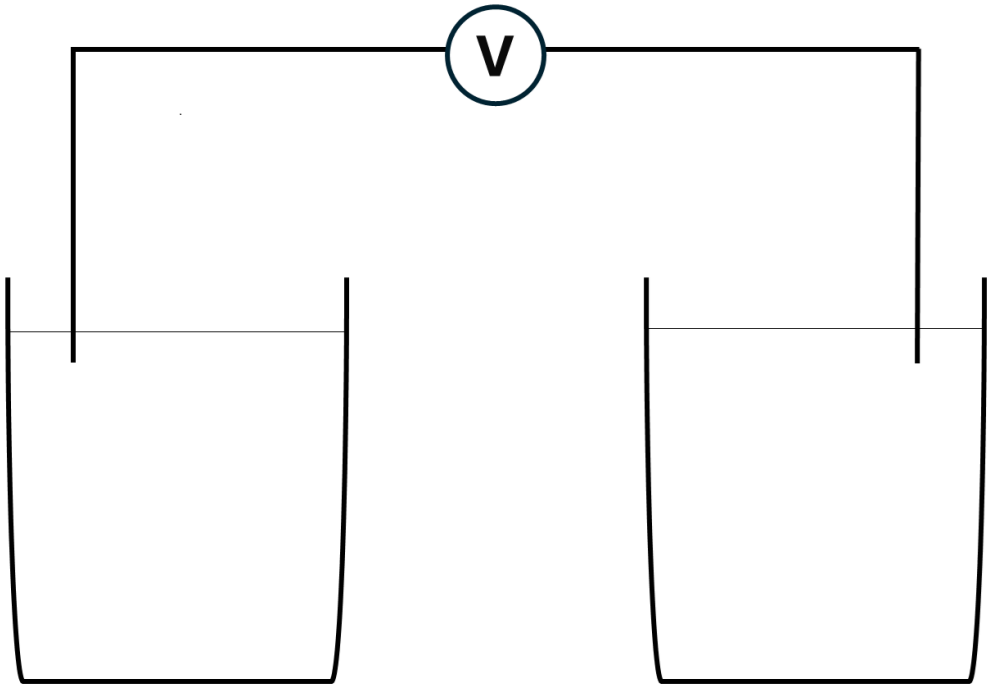
# A Simple Galvanic Cell

The diagram below represents a simple galvanic cell. Complete the Electron Movement Model where zinc metal (Zn) and zinc sulfate ($ZnSO_4$) are in one beaker and copper metal (Cu) and copper sulfate ($CuSO_4$) are in the other.

On the diagram indicate the:

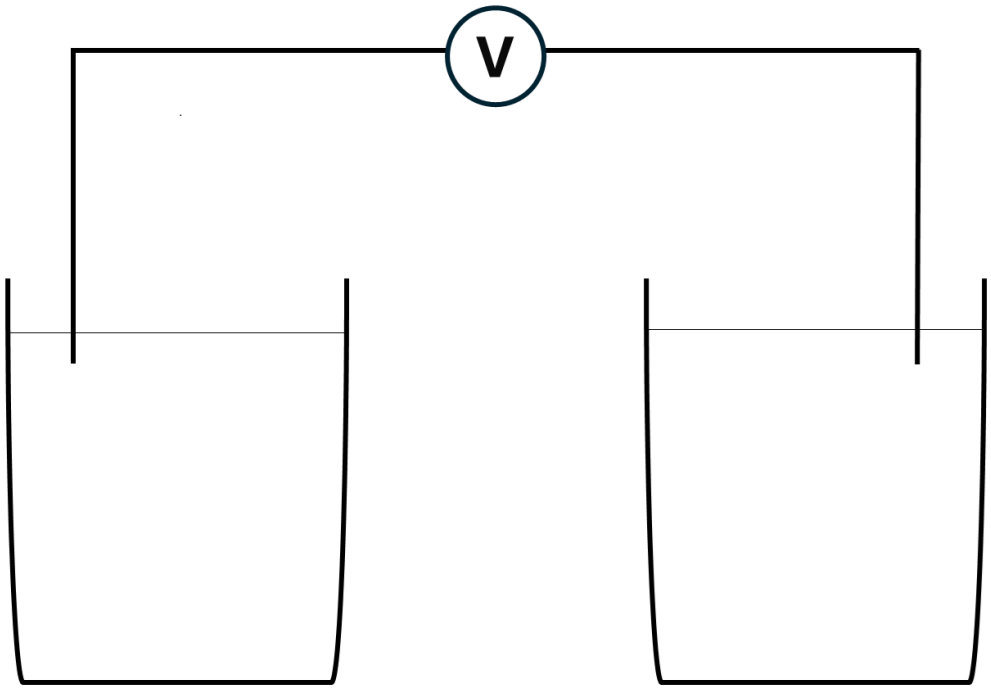
- metals
- metal salts
- electron flow
- salt bridge and salt half-cell equations
- full reaction equation
- site of oxidation
- site of reduction
- electrode at which oxidation occurs
- electrode at which reduction occurs

Repeat this process for the next two galvanic cells, also.



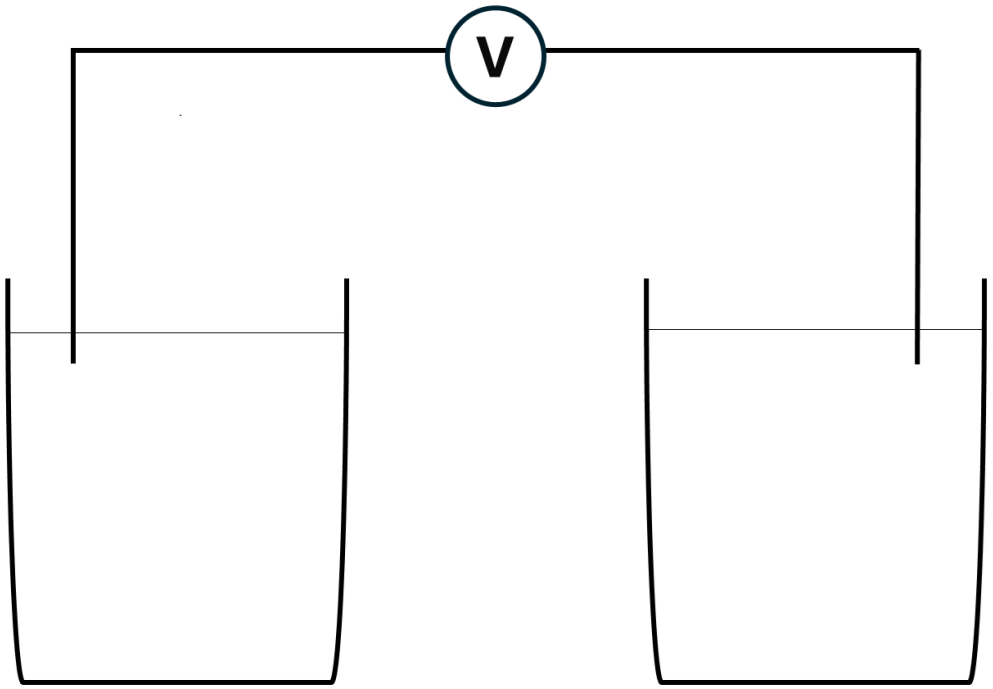
# A Simple Galvanic Cell

Complete the Electron Movement Model where magnesium metal (Mg) and magnesium sulfate ($MgSO_4$) are in one beaker and copper metal (Cu) and ($CuSO_4$) are in the other.

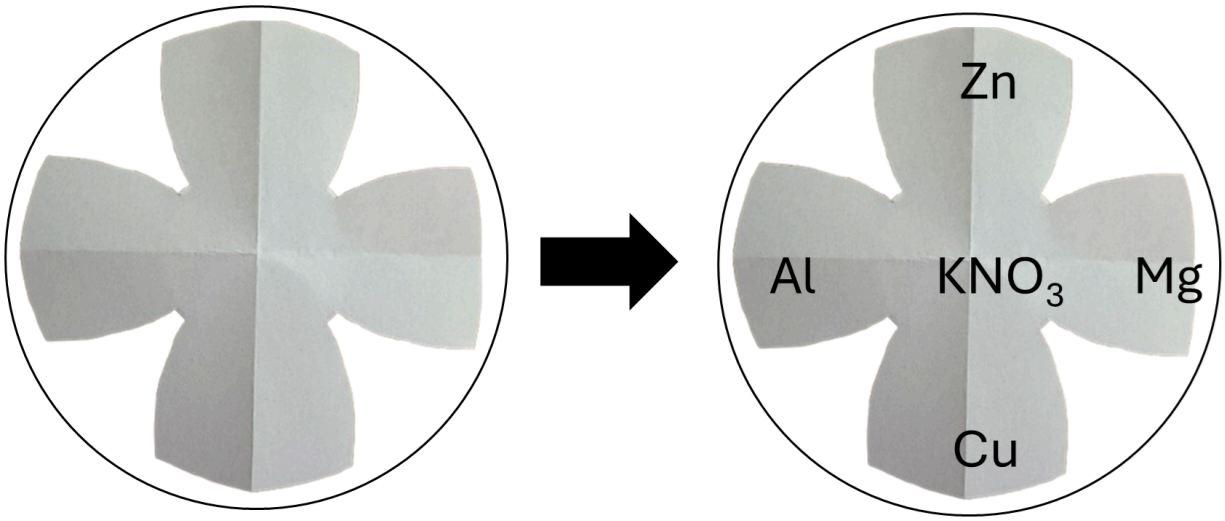


# A Simple Galvanic Cell

Complete the Electron Movement Model where iron metal (Fe) and iron sulfate ($FeSO_4$) are in one beaker and copper metal (Cu) and ($CuSO_4$) are in the other.



# A microscale galvanic cell – the four leaf clover model.

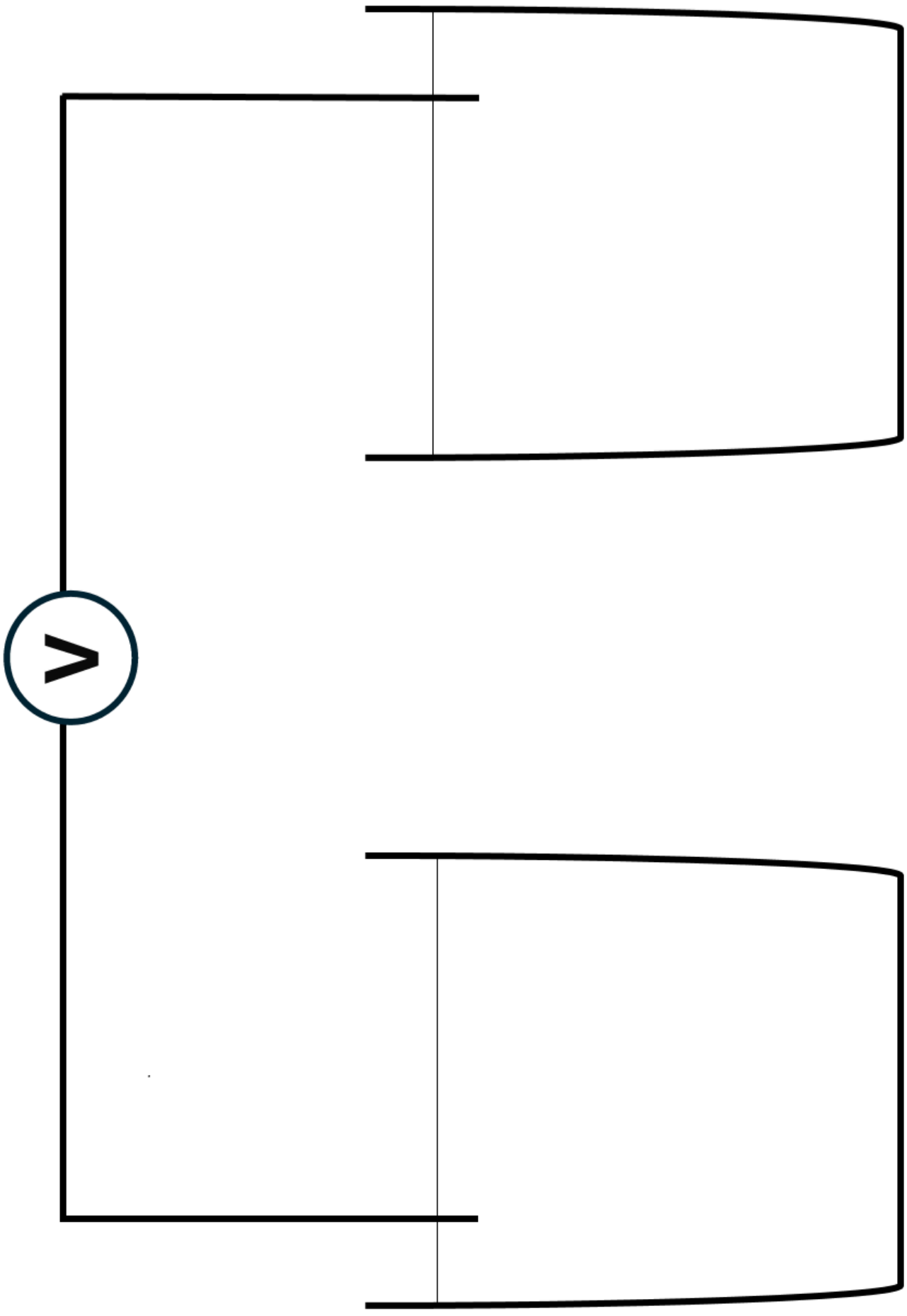



In the space below, construct a results table before you take any voltage readings

# Session 3 - Planning for Senior Cycle Chemistry

| **Points to consider:** | **Points to consider:** |
|---|---|
| Good knowledge and understanding of:<br>• the contents of the specification<br>• the role of the unifying strand and linkage to other strands<br><br>Cross cutting themes across the contextual strands<br><br>The identification of opportunities to further develop students'<br>• key competencies<br>• scientific practices<br><br>The identification of opportunities to investigate supported by primary and secondary data | How to build on student learning from Junior Cycle<br><br>Choice of a theme for a unit of learning that is contextualised for your students<br><br>Choice of Learning Outcomes from the strands that align with your chosen theme<br><br>Students' prior knowledge, UDL considerations and needs of student cohort<br><br>Considerations regarding AAC |
| | |

# Session 3 - Planning for Senior Cycle Chemistry



# Standard reduction potentials in aqueous solutions at 25°C

| | Oxidising Agent | | | | Reducing Agent | Reduction Potential (V) | |
|---|---|---|---|---|---|---|---|
| STRONGER OXIDISING AGENT | $F_2$ | + | $2e^-$ | → | $2F^-$ | 2.87 | WEAKER REDUCING AGENT |
| | $H_2O_2$ | + | $2H^+ + 2e^-$ | → | $2H_2O$ | 1.78 | |
| | $MnO_4^-$ | + | $8H^+ + 5e^-$ | → | $Mn^{2+} + 4H_2O$ | 1.51 | |
| | $Au^{3+}$ | + | $3e^-$ | → | Au | 1.50 | |
| | $Cl_2$ | + | $2e^-$ | → | $2Cl^-$ | 1.36 | |
| | $O_2$ | + | $4H^+ + 4e^-$ | → | $2H_2O$ | 1.23 | |
| | $Cr_2O_7^{2-}$ | + | $14H^+ + 6e^-$ | → | $2Cr^{3+} + 7H_2O$ | 1.23 | |
| | $Br_2$ | + | $2e^-$ | → | $2Br^-$ | 1.07 | |
| | $NO_3^-$ | + | $4H^+ + 3e^-$ | → | $NO + 2H_2O$ | 0.96 | |
| | $Ag^+$ | + | $e^-$ | → | Ag | 0.80 | |
| | $I_2$ | + | $2e^-$ | → | $2I^-$ | 0.54 | |
| | $Cu^+$ | + | $2e^-$ | → | Cu | 0.52 | |
| | $O_2$ | + | $2H_2O + 4e^-$ | → | $4OH^-$ | 0.40 | |
| | $Cu^{2+}$ | + | $2e^-$ | → | Cu | 0.34 | |
| | $2H_2O^+$ | + | $2e^-$ | → | $H_2 + 2H_2O$ | 0.00 | |
| | $Pb^{2+}$ | + | $2e^-$ | → | Pb | -0.13 | |
| | $Sn^{2+}$ | + | $2e^-$ | → | Sn | -0.14 | |
| | $Ni^{2+}$ | + | $2e^-$ | → | Ni | -0.26 | |
| | $Fe^{2+}$ | + | $2e^-$ | → | Fe | -0.45 | |
| | $Cr^{3+}$ | + | $2e^-$ | → | Cr | -0.74 | |
| | $Zn^{2+}$ | + | $2e^-$ | → | Zn | -0.76 | |
| | $2H_2O$ | + | $2e^-$ | → | $H_2 + 2OH^-$ | -0.83 | |
| | $Mn^{2+}$ | + | $2e^-$ | → | Mn | -1.19 | |
| | $Al^{3+}$ | + | $2e^-$ | → | Al | -1.66 | |
| | $Mg^{2+}$ | + | $2e^-$ | → | Mg | -2.37 | |
| | $Na^+$ | + | $e^-$ | → | Na | -2.71 | |
| | $Ca^{2+}$ | + | $2e^-$ | → | Ca | -2.87 | |
| | $Ba^{2+}$ | + | $2e^-$ | → | Ba | -2.91 | |
| WEAKER OXIDISING AGENT | $K^+$ | + | $e^-$ | → | K | -2.93 | STRONGER REDUCING AGENT |
| | $Li^+$ | + | $e^-$ | → | Li | -3.04 | |

Adapted from p.715, Chemistry by John McMurray & Robert C. Fay, Prentice Hall, 1995