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| **Lesson Number: 25.5a** | | |
| **Lesson Title: Investigation, using a search coil and oscilloscope, the effect on the magnetic flux linkage of varying the angle between a search coil and magnetic field direction**  **Required Practical 11** | | |
| **Specification Reference** | | **3.7.5.3** |
| **Learning Objectives** | | |
| Magnetic flux defined by where *B* is normal to *A*.  Flux linkage as where *N* is the number of turns cutting the flux.  Flux and flux linkage passing through a rectangular coil rotated in a magnetic field: flux linkage    Faraday’s and Lenz’s laws.  Magnitude of induced *emf* = rate of change of flux linkage | | |
| **Opportunities for Assessment** | | |
| Assessing the practical aspect of the lesson  **Skills Assessment (Required practical 11)**  AT (a),(b),(f),(h) | | |
| **Starter:** | Recap oscilloscope use and magnetic flux linkage previous lessons (Slides #1 and #2) – Note that this experiment links to lesson 25.2 however waiting until the end of the chapter ensures they have had as much practice as possible with oscilloscopes first | |
| **Main:** | Slide #3 explains to students that their teacher will decide how much dependence they are given in this experiment. See pages 105-106 of the AQA practical handbook for Physics for full details  Slide #4 outlines the assessed skills that will be looked at by the teacher. Students should keep these in mind and ensure that their teacher watches them perform these skills during the practical.  Depending on the outcomes that the teacher wishes to assess, the pupils can either be given a method to follow or a lesson can be used as a full research and planning session  The experiment needs to be performed. See pages 105-109of the practical handbook for A-Level Physics for full details. | |
| **Plenary:** | Go over the experiment and the results; write up the experiment in full; discuss the assessing of the skills and the outcome assessed by the teacher. | |

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| **Homework:** | Write up the experiment | |
| **Differentiation / Extension / S&C** | | |
| Assistance / guidance on the planning of the experiment can be altered for group’s ability | | |
| **Numeracy / Literacy** | | **SMSC / Fundamental British Values** |
| Use of formula | | Team work in a practical lesson  Understanding other people’s opinions and ideas in the planning of the experiment |
| **RESOURCES:**  PRACTICAL 11 - AQA Notes and Method – (1 copy unless specified additional methods) | | |
| Per group:   * oscilloscope * large circular coil * Stand (or support) for circular coil * Low voltage 50Hz AC supply (or AF signal generator) * Connecting leads * protractor * Axial or lateral search coil * Stand, boss and clamp to support search coil | | |
| **Risk Assessment** e.g. CLEAPSS card reference | | |
| Ensure that the voltage supply matches the requirements of the coil to avoid damage to the equipment through heating – turn off when not in use. | | |
| **Working Scientifically (HSW)** | | |
| Assessed practical and write-up | | |