SUBJECT A2 Physics — Year 13 LP 5

This half term: Skills, Knowledge and Understanding to be developed:

- **Skills (students will be able to by the end of the Learning Programme):** apply the laws of Faraday and Lenz and calculate magnetic flux, magnetic flux density and flux linkage.
- **Knowledge (students will know by the end of the Learning Programme**): Faraday's Law and Lenz's Law and how they apply to a generator.
- **Understanding (students will demonstrate their understanding):** by answering a range of A2 level exam questions relating to magnetic fields.

Key Terms/Words:
magnetic flux,
magnetic flux density,
flux linkage,
induction,
a.c. generator

LP 5 – Week 1 & 2 Learning Outcomes:

1. Students will know the definition of magnetic flux as $\phi = ABcos\theta$ and flux linkage = $N\phi$.
2. Students will know the laws of Faraday and Lenz
3. Students will know how to apply the laws of Faraday and Lenz (i.e. emf = - rate of change of flux linkage)

Success criteria:

1. Use Faraday and Lenz's Laws in calculations involving electromagnetic induction.

Homework: LP 5

A Level standard questions

LP 5 – Week 3 & 4 Learning Outcomes:

1. Students will understand the idea that an emf is induced in a linear conductor moving at right angles to a uniform magnetic field.
2. Students will be able to describe qualitatively, how the instantaneous emf induced in a coil rotating at right angles to a magnetic field is related to the position of the coil, flux density, coil area and angular velocity

Students will apply and demonstrate new knowledge and skills in a CDG ASSESSMENT.

Assessment

CDG 1

Grade

Success criteria:

1. Apply Faraday's Law and Lenz's Law to a coil rotating at right angles to a magnetic field (i.e. an a.c. generator)

Homework 2: LP 5

LP 5 – Week 5 & 6 Learning Outcomes:

1. Students will be able to describe the applications, implications and the associated benefits to society of Faraday's law in the case of a rotating coil in a magnetic field. They can consider how the invention of devices such as the a.c. generator has benefitted society.
2. Students will practice the skills involved in the practical aspect of the course, to include graph plotting including the construction of error bars and maximum and minimum gradients, calculation of absolute and percentage uncertainties, using logs to linearise relationships so that they can be plotted in the form $y = mx + c$

Students will apply and demonstrate new knowledge and skills in a CDG ASSESSMENT.

Assessment

CDG 2

Grade

LP 5 – Week 7 Learning Outcomes:			