

Getting Ready For

Y1 A Level Electronics

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| Y1 A Level Electronics | Logic and Ohm's Law | Summer 2024 |
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We are delighted you have chosen to study A Level Electronics at Worthing College.

Instructions: This pack will help you make the best possible start to studying this subject.

The four tasks in this pack:

- should take you **about 4 hours to complete** in total.
- should be handed into your teacher when teaching starts – *from Monday 9th September 2024*– with your name on it for assessment.
- are available on the internet – follow the links in the document.

If you need help: The tasks are designed to get a bit more difficult as you work through them as they are preparing you for studying at a higher level and to become an effective independent learner. You should try to get as far as you can working on your own but if you do need help, please email us at c.stabler@worthing.ac.uk, telling us which task you are working on and what help you need. Help is available throughout the summer holidays.



Skills Focus for this Getting Ready for Pack

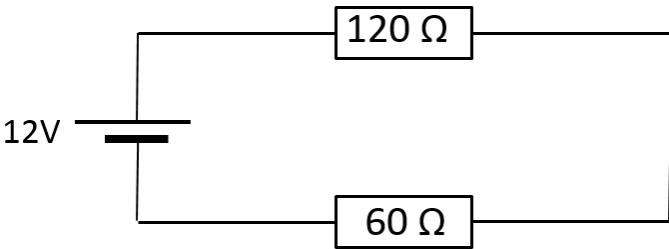
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| <ul style="list-style-type: none"> • Research sources of information • Quality of written communication • Clarity of mathematical communication – how well you show your workings and lay out your work. | <ul style="list-style-type: none"> • Applying logic to solve problems • Drawing circuit diagrams • Accuracy of numerical calculations. |
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Logic and Ohm's Law

| Target Grade | Type of task | Task | Deadline |
|--------------|------------------|--|---|
| All | Getting Prepared | <p>Organisation is the first step to success in Electronics. Make sure you have the following things when you start in September:</p> <ul style="list-style-type: none"> • Ring binder with dividers • Scientific calculator • Pens, pencils, a ruler and an eraser • Downloaded copy of the course ebook (see below) <p>Electronics at A level is an interesting course that combines theory and practical activities. For you to do well it is imperative that you keep on top of your work. It is expected that in addition to 4 hours of electronics lessons each week you will need to do at least a further 4 hours of independent study either at college or at home. This will no doubt increase significantly closer to the exams.</p> <p>Your electronics course does not have a text book but an ebook is available from the exam board's website. Download it here: Resource (edugas.co.uk)</p> | <i>Week beginning 9th September 2024</i> |

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| | Useful facts and fun on electronics can be found here: rOmV4 - Home (revisomatic.org) . Finally, a good YouTube channel with useful tutorials is here: 0 to n counter - YouTube | |
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Logic and Ohm's Law

| Target Grade | Type of task | Task | Deadline | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| All | Research | <p>0.1 Read the chapter on 'Core concepts' in the ebook (link above). Make notes and answer the questions at the end of each chapter.</p> <p>0.2 Research the following key terms and explain in your own words what they mean. You should include diagrams and examples in your answers.</p> <ul style="list-style-type: none"> • Operational amplifier, • NAND gate logic, • flip-flop, • Boolean algebra, • The E24 series of preferred resistor values. | Week beginning 9th September 2024 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| All | Research | <p>0.3 Digital electronic circuits are often used to generate sequences. You might be asked to design and build a circuit that could control two sets of traffic lights at a crossroads.</p> <p>We can assume that the set of lights controlling ROAD 1 is RED 1, AMBER 1 and GREEN 1 and controlling ROAD 2 we have RED 2, AMBER 2 and GREEN 2. By observing your nearest traffic light junction, complete the sequence in the table below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">ROAD 1</th> <th colspan="3">ROAD 2</th> </tr> <tr> <th>RED1</th> <th>AMBER1</th> <th>GREEN1</th> <th>RED2</th> <th>AMBER2</th> <th>GREEN2</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | ROAD 1 | | | ROAD 2 | | | RED1 | AMBER1 | GREEN1 | RED2 | AMBER2 | GREEN2 | ON | OFF | OFF | OFF | OFF | ON | ON | OFF | OFF | OFF | ON | OFF | | | | | | | | | | | | | Week beginning 9th September 2024 |
| ROAD 1 | | | ROAD 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RED1 | AMBER1 | GREEN1 | RED2 | AMBER2 | GREEN2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| High Grades | Calculations | <p>0.4</p>  <p>Q1 Redraw the circuit above showing how you would (a) measure the current through the 60Ω resistor and (b) the potential difference across the 120Ω resistor.</p> <p>Q2 If the total resistance in the circuit is the sum of both resistors, use Ohm's law to calculate the current flowing in the circuit.</p> <p>Q3 A voltmeter across the 120Ω resistor would measure 8V. What is the voltage across the 60Ω resistor? Explain your answer.</p> <p>Q4 The 60Ω resistor is replaced by an LDR. Redraw the circuit diagram and explain what happens to the current in the circuit if light intensity increases. How does the voltage across the 120Ω resistor change?</p> | Week beginning 9th September 2024 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Work Experience week

All year 1 students are required to participate in a week-long work placement during their first year of study. You will be expected to locate one week's worth of work placement and submit your work experience form before October half term.

Placement Dates:

L2/L3 students on double /triple qualifications:

1 week course-specific placement, expected placement dates will be confirmed by the course leaders at the beginning of September.

Students with 2 or more single subjects:

1 week placement during the Easter holidays or w/c 23 June 2025

You can find the work experience form [HERE](#)

More information and guidance can be found [HERE](#)