

Physics Unit 3 **Week 2**

Good Morning Class

This is an instruction email of **Week 2** tasks.

Instructions

Please watch my instruction videos for week **2**

Mr Zhao's YouTube videos links (2 videos)

<https://www.youtube.com/watch?v=lah5t8b6zoE>

<https://www.youtube.com/watch?v=NIWCOZT7LP0>

This week we are doing revision of Newton's laws. Since we did it in year 11, the videos are eight example questions. If you are unsure about any questions in your text book, note book and checkpoint chapter 1, 2 Please let me know. I am happy to make a video to go through them with you.

Please contact your teacher for help!

Physics Unit 3 **Week 3**

Good Morning Class

This is an instruction announcement of **Week 3**.

Introduction

This week's topics

- **2D Projectile motion**
- **Momentum and Impulse**
- **Conservation of Momentum**
- **Elastic and Inelastic collisions**

Please watch following instruction videos for week 3. **It is important to watch the videos in the following sequence.**

- | | |
|---|--|
| 1. https://www.youtube.com/watch?v=dLFpzKevEcQ
Zhao | Projectile Motion Example by Mr |
| 2. https://www.youtube.com/watch?v=HyNpF_ashP8
Zhao | 2D Projectile Motion Example by Mr |
| 3. https://www.youtube.com/watch?v=fdeH6Ksedwk
demonstration by other youtube presenters | Momentum and Impulse |
| 4. https://www.youtube.com/watch?v=OnnudKA_7t8
Zhao | Momentum and Impulse by Mr |
| 5. https://www.youtube.com/watch?v=hKGMDfjI3ml
Explained by Mr Zhao | Conservation of Momentum |
| 6. https://www.youtube.com/watch?v=juRale7Q_Zw | Momentum Example by Mr Zhao |
| 7. https://www.youtube.com/watch?v=hhXIK0f2Q_Q
Zhao | Elastic and Inelastic Collisions by Mr |

Work for submission

DECV Notes Booklet (Electronic copies available) Page 3.18-3.23

Other tasks (Do not need to hand in)

Text Book Section 1.4 all

2.1 all

2.2 all

Checkpoints: Chapter 5: Projectiles, Chapter 4 Momentum

Please contact your teacher for help!

Physics Unit 3 **Week 4**

Good Morning Class

This is an instruction announcement of **Week 4**.

Introduction

This week's topics

- **Different types of Energy (Kinetic Energy, Gravitational Potential Energy and Work Done)**
- **Power**
- **Conservation of Energy**
- **Hooke's law and Elastic potential energy**
- **Yanka Simulation Activity (Software Activation Code 4065 - 6840 – 8634)**

Please watch following instruction videos for week 3. **It is important to watch the videos in the following sequence.**

1. <https://www.youtube.com/watch?v=BvsPhNK0rZU> Types of Energy and its unit by Mr Zhao
2. <https://www.youtube.com/watch?v=oWiUhYMUDmI> Area under graph and Conservation of Energy by Mr Zhao
3. <https://www.youtube.com/watch?v=8TeCXrcK18s> Power by Mr Zhao
4. <https://www.youtube.com/watch?v=2uNjxD-mk0> Energy question example by Mr Zhao
5. <https://www.youtube.com/watch?v=dLlVwmgp6UA> Hooke's Law and Elastic Potential Energy by Mr Zhao
6. <https://www.youtube.com/watch?v=QJMGEqRS0bl> Year 12 week 4 Hooke's law and Conservation of Energy examples by Mr Zhao
7. <https://www.youtube.com/watch?v=Zz2Z3dBJVBo> Year 12 week 4 Yanka activity walkthrough by Mr Zhao

Interesting Videos (If you found my videos boring, watch the following)

- <https://www.youtube.com/watch?v=iCqm5uxc2dE> Introducing Work and Energy by NASAclips
- https://www.youtube.com/watch?v=BSWl_Zj-CZs Energy Overview by other youtube presenters
- https://www.youtube.com/watch?v=m_a81XTxu88 Conservation of energy Animation by other youtube presenters
- <https://www.youtube.com/watch?v=hJHaov5CT-o> Hooke's Law example by other youtube presenters

Work for submission

Yanka Activity Page 4.9 of DECV notes

DECV notes weekly assignment Page 4.15-4.18

Other tasks (Do not need to hand in)

Text Book Section 2.4, 2.4 all questions

Checkpoints: Chapter 3: Energy

Please contact your teacher for help!

Physics Unit 3 **Week 5**

Good Morning Class

This is an instruction announcement of **Week 5**.

Introduction

This week's topics

- **Uniform Circular Motion**
- **Non-Uniform Circular Motion**
- **Newton's law of gravity**
- **Logger Pro Activity (Software available on DECV online toolbox, watch the youtube link walkthrough by Mr Zhao for more detail)**

Please watch following instruction videos for week 3. **It is important to watch the videos in the following sequence.**

1. Circular Motion introduction by other youtube presenters
<https://www.youtube.com/watch?v=yyDRI6iQ9Fw>
2. Circular Motion introduction 2 by other youtube presenters
https://www.youtube.com/watch?v=PBpe_LLIQJw
3. Uniform circular motion Equations needed to know for VCE exams by Mr Zhao
<https://www.youtube.com/watch?v=6dyqRlf1xio>
4. Non-Uniform circular motion Equations needed to know for VCE exams by Mr Zhao
<https://www.youtube.com/watch?v=YwWi0zbOuMc>
5. Non-Uniform Circular Motion Exam style questions by Mr Zhao
https://www.youtube.com/watch?v=9cRoKhqN_xc
6. Newton's Law of Gravitation by other youtube presenters
<https://www.youtube.com/watch?v=Jk5E-CrE1zg>
7. Forces between the Earth and the Moon by other youtube presenters
<https://www.youtube.com/watch?v=8bTdMmNZm2M>
8. Newton's Law of Gravitation equations needed to know for VCE exams by Mr Zhao
<https://www.youtube.com/watch?v=3XqqsjA3Pkc>
9. Newton's law of Gravitation exam style examples by Mr Zhao
<https://www.youtube.com/watch?v=-vbp705U4eE>
10. Logger Pro activity walkthrough by Mr Zhao <https://www.youtube.com/watch?v=KWrSk8-bdy8>

Work for submission

Logger Pro Activity: DECV notes Page 5.26 (Instruction on Page 5.11)

DECV notes weekly assignment Page 5.22-5.27

Other tasks (Do not need to hand in)

Text Book Section 2.5, 2.6, 2.7,3.1 and 3.2 all questions

Checkpoints: Chapter 6: Circular Motion

Please contact your teacher for help!

Physics Unit 3 **Week 6**

Good Morning Class

This is an instruction announcement of **Week 6**.

Introduction

This week's topics

- **Satellites in circular orbits**
- **Kepler's 3rd law**
- **Energy of satellites in a gravitational field**

Please watch following instruction videos for this week. **It is important to watch the videos in the following sequence.**

1. Planetary Orbit by other youtube presenters
<https://www.youtube.com/watch?v=gG7M7Rf3xN4>
2. Kepler's 3rd law by other youtube presenters
<https://www.youtube.com/watch?v=FjAdqr1Qbac>
3. Summaries of equations for this topic by Mr Zhao
<https://www.youtube.com/watch?v=6vTrpVxRqbA>
4. Apparent Weight and true weight by Mr Zhao
<https://www.youtube.com/watch?v=Xno1olagAuc>
5. Apparent weightlessness by Mr Zhao https://www.youtube.com/watch?v=x7rcj_gARdE
6. Gravitation equation exam style questions examples by Mr Zhao
<https://www.youtube.com/watch?v=uRUcEEembM74>
7. Gravitational Force vs Radius graph and apparent weight exam style questions by Mr Zhao
<https://www.youtube.com/watch?v=B1ZccYnOMag>
8. Elevator problems questions by other youtube presenters
9. <https://www.youtube.com/watch?v=wuOU-yLwsFM>

Work for submission

DECV notes weekly assignment Page 6.16-6.20

Other tasks (Do not need to hand in)

Text Book Section 3.3, 3.4, 3.5 all questions

Checkpoints: Chapter 7: gravity

Please contact your teacher for help!

Physics Unit 3 **Week 9**

Good Morning Class

This is an instruction announcement of **Week 9**.

We are starting a new area of study. This area of study is Electronics and Photonics. In this week, we are going to revise year 11 knowledge first. After that you will be introduced to electrical diode.

This week's topics

- **Revision of year 11 electricity topic**
- **AC and DC**
- **Electrical diodes**

Instructions

Read week 9 DECV notes, and text book section 4.1 and 4.2 for revision.

Construct a new exam style formula sheet for this area of study on an A4 paper

Please watch following instruction videos for this week. **It is important to watch the videos in the following sequence.**

Year 11 electricity videos

- How current splits? By Mr Zhao <https://www.youtube.com/watch?v=R6vee0MZ3rY>
- Total resistance of series and parrallel circuits by other youtube presenters <https://www.youtube.com/watch?v=C9P3Jgr779I>
- Equations summary and examples By Mr Zhao <https://www.youtube.com/watch?v=REA4LKcB7pU>
- Complex electrical circuit calculation example by other youtube presenter (very informative must watch) <https://www.youtube.com/watch?v=CZggGTxL9cA>
- Series and Parallel Circuit practical Demonstration by other youtube presenters (very informative must watch) <https://www.youtube.com/watch?v=a6YyEqFFDA>
- Design of a voltage divider by Mr Zhao <https://www.youtube.com/watch?v=P53t89w12WI>

Year 12 New knowledge

1. AC and DC by other youtube presenter <https://www.youtube.com/watch?v=vN9aR2wKv0U>
2. AC and DC by Mr Zhao <https://www.youtube.com/watch?v=CPV0bL0vVho>
3. What is a diode? By other youtube presenter https://www.youtube.com/watch?v=MVy_MG0X2h4

4. Diodes practical experiment by other youtube presenter
<https://www.youtube.com/watch?v=e2qCGpZ8wQ0>
5. Diode summary by Mr Zhao <https://www.youtube.com/watch?v=WeJ9P9q-wZ0>
6. Diode exam style example questions by Mr Zhao
<https://www.youtube.com/watch?v=VsuVmS6O33E>

Work for submission

DECV notes weekly assignment Page 9.20-9.26

Yenka simulation activity DECV notes Page 9.12-9.15

Yenka software can be downloaded from <http://www.yenka.com/en/Downloads/>

Other tasks (Do not need to hand in)

Text Book Section 4.1 4.2

Checkpoints: Chapter 8: Electronic Basics

Please contact your teacher for help!

Physics Unit 3 **Week 10**

Good Morning Year 12s

This is an instruction announcement of **Week 10**.

This week's topics

Amplifier

- **Inverting amplifier**
- **Amplifier output clipping**
- **Optical fibres**

Instructions

Construct a new exam style formula sheet for this area of study on an A4 paper

Please watch following instruction videos for this week. **It is important to watch the videos in the following sequence.**

1. AC signals by Mr Zhao <https://www.youtube.com/watch?v=d7SEvcMr9t0>
2. Amplifier by Mr Zhao https://www.youtube.com/watch?v=v_pSagR3cUs
3. Inverting amplifier by Mr Zhao <https://www.youtube.com/watch?v=GzA79WE7X7k>
4. Amplifier output clipping by Mr Zhao https://www.youtube.com/watch?v=gM_o-7OIH1s
5. Optical fibres – background knowledge of Photonics by Mr Zhao <https://www.youtube.com/watch?v=xe2epUw4BkU>

Work for submission

DECV notes week 10 weekly assignment

Yenka simulation activity DECV notes Page 10.10-10.11 (Follow instructions on Page 10.10 to build an amplifier, thus you are able to investigate the input and output of this amplifier in order to answer questions on page 10.11. Have fun with yenka software 😊)

Yenka software can be downloaded from <http://www.yenka.com/en/Downloads/>

Other tasks (Do not need to hand in)

Text Book Section 4.3 Question 1-10

Checkpoints: Chapter 10: Amplifiers

Please contact your teacher for help!

Physics Unit 3 **Week 11**

Good Morning Year 12s

This is an instruction announcement of **Week 11**. **This is the last week of the Area study 2: Electronics and Photonics. You SAC for this area of study is going to be a test. It is scheduled week 13. Don't be afraid to contact your teachers and ask questions!**

This week's topics

1. Photonics (optical Detectors and Optical Sources)
2. Optical Detectors – LDR (Light Dependant Resistor)
3. Optical Detectors – Photodiodes
4. Optical Source – LED (light Emitting Diode)
5. Radio wave transmission (Modulation and Demodulation)

Instructions

Construct an exam style formula sheet for this area of study on an A4 paper

Please watch following instruction videos for this week. **It is important to watch the videos in the following sequence.**

1. Photonics (optical Detectors and Optical Sources) by Mr Zhao
<https://www.youtube.com/watch?v=oOOz95SOZKQ>
2. Optical Detectors – LDR and Photodiodes by Mr Zhao
<https://www.youtube.com/watch?v=7H6TIFUQL-Q>
3. Optical Source – LED by Mr Zhao <https://www.youtube.com/watch?v=Dyb2zhUCy1Y>
4. Radio wave Transmissions by Mr Zhao <https://www.youtube.com/watch?v=d-V5N3DMpUg>
5. Radio wave transmission – **(Please watch this video AFTER watching video 4. This documentary contains too much information! All year 12 students only need to know the basic concepts of modulation and demodulation process with the carrier wave for exam. Students need to be able to explain only the function of modulation and demodulation. Other information such as AM, FM is relevant for VCE exam. Year 12s, please watch this video to gain some background knowledge about radio wave transmission, DO NOT WORRY about the technical details mentioned in this documentary)**
Part 1 https://www.youtube.com/watch?v=4Qgg_upU_5s
Part 2 <https://www.youtube.com/watch?v=JS8xlwyc6G4>

Work for submission

Week 11 weekly assignment DECV notes

Other tasks (Do not need to hand in)

Text Book Section 5.2 5.3

Checkpoints: Chapter: Photonics

Please contact your teacher for help!