مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan –PHYSICS

Subject	**Physics**
Class/ Section	**Yr 9 (A to F)**
Week	**Week 3 : 12th September to 16th September, 2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**Keeping warm**
Key Vocabulary	conduction, convection, radiation, absorption, emission, thermal condutivity
Lesson 1,2,3 - Live Zoom lesson along with face to face instruction for students present on a particular day **Work will be assigned in google classroom which will be matched to the students' ability.**	**Lesson 1:** **Specific Learning objectives:** • Describe how energy transfer may take place by conduction, convection and radiation. **Specific Intended Learning Outcomes:** • Understand that heat is a form of energy and that it can be converted into other forms of energy. • Identify good and bad conductors/insulators of heat. • Recall conduction, convection and radiation. **Tasks:** 1. Introduce the lesson objectives and learning outcomes. 2. Teacher would explain how energy can be transferred by heating in different ways. 3. Students will identify the 3 different ways of heat transfer(depending on the medium) with examples. 4. Review absorption and emission 5. Complete the questions (pg 38) assigned from the Physics text book in the notebook. Also complete the questions given in the worksheet.
Assessment Criteria/ Essential questions: **Resources:**	**Support** – Careful use of questioning should help students to recall prior learning. **Stretch -** Ask students to list two situations in which conduction is useful and two in which it is not, then do the same for convection. Edexcel GCSE (9-1) Physics Textbook Ppt on the topic

Lesson 2 & 3:

Specific Learning objectives:

- Discuss the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling qualitatively.
- Know and understand that vacuum flask is often used to store hot or cold liquids and uses a combination of different materials to reduce energy transfer by heating.

Specific Intended Learning Outcomes:

- Define the meaning of thermal conductivity.
- Investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation properties of a material.
- Describe ways of reducing unwanted energy transfers using thermal insulation.
- Describe the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling qualitatively.
- Explain which features of the flask reduce energy transfer by radiation, by conduction and by convection.

Tasks :Lesson 2:

1. Use doodle interactive slides to explain thermal conductivity.
2. Students understand that a high thermal conductivity means that a material is good at conducting energy, and that a low value is therefore desirable for an insulating material
3. Teacher explains the ways of reducing unwanted energy transfers using thermal insulation.
4. Research work: How double glazing, loft insulation, draught excluders, cavity wall insulation, shiny foil behind radiators, carpets & curtains helps to make the house on the right more energy efficient.
5. Complete the questions 3 &4 (pg 39) assigned from the Physics text book in the notebook.

Lesson 3:

1. Open ended question to the students, "Why vacuum flask keeps hot drinks hot and cold drinks cold?"
2. Use the active teach ppt for assessing the students to complete the given questions.
3. use the level of problem to identify any areas for revisiting before moving on to the next topic.

Assessment Criteria/ Essential questions:

Support: Label the different parts of a flask. Write which type of heat transfer(conduction, convection and radiation) each part helps to keep to a minimum.

Stretch: In some vacuum flasks, both the case and the double-walled container are made of metal. These vacuum flasks are stronger. However, they are heavier. State and explain one disadvantage apart from cost.

Extend: Ask the students to complete question E1 (pg 39) assigned from the Physics text book

Resources:

Edexcel GCSE (9-1) Physics Textbook

Ppt on the topics

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Physics**
Class/ Section	**Year 10 A - F**
Week	**Week 3 : 12th September to 16th September, 2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**4**
Unit/Topic	**Radioactivity**
Key Vocabulary	Background radiation**,** radioactivity decay, alpha, beta, gamma and positron
Specific Learning objectives And learning outcomes	**Lesson 1. Electrons and orbits (Reinforcement)** **Specific Learning objectives** Recall and explain that electrons change orbit when there is absorption or emission of electromagnetic radiation. Recall how atoms may form positive ions by losing outer electrons **Specific Intended Learning Outcomes** Understand the electrons need to gain or lose exactly the right amount of energy to move between shells. Explain the colour emitted from the electrons depends on the amount of energy that is lost as the electrons move shells. Describe if an electron gains too much energy it is lost from the atom and the atom becomes an ion

Tasks	**Tasks:** 1. Students revisit the Progression questions on *SP6c Electrons and orbits* in the Student Book and assess by themselves whether they feel more confident about answering them 2. Complete the worksheet –SC6C. Exam style questions
Assessment Criteria/ Essential questions	When students have completed the worksheet questions, check which students have difficulty with which questions and use the level of problem to identify any areas for revisiting before moving on to the next topic. **Support:** Students could work in pairs to complete this activity. **Stretch :** Ask students to complete the Extra Challenge question.
Resources	Edexcel GCSE (9-1) students book Interactive power point from Board works Worksheet SP 6C (differentiated)
Specific Learning objectives And learning outcomes	**Lesson 2. Background radiations** **Specific Learning objectives** Explain what is meant by background radiation. Describe the origins of background radiation from Earth and space. Describe methods for measuring and detecting radioactivity limited to photographic film and a Geiger–Müller tube. **Specific Intended Learning Outcomes** Recall what are ionising radiations Understand that we are constantly being exposed to ionising radiation at a low level called background radiation Describe the natural and manmade sources of background radiations Describe the two ways of detecting radiations Explain why the measurements of the activity of a radioactive source must be corrected

Task	**Tasks** 1. Use a GM tube to measure background radiations 2. Identify the main sources of background radiations from a pie chart and classify them into natural and artificial sources and answer questions 2-4 in the students book 3. Show ALDS video *SP6d Background radiation and describe the two methods of detecting radiation* 4. *Discuss why do we need to measure background radiations when we are investigating radioactivity and answer question 6 in the students book*
Assessment Criteria/ Essential questions	**Support:** Worksheet 6d.3 question 1 -3 **Stretch:** E1 in students book **Extend** : Why do you think that radon gas in houses is more of a problem than it was 100 years ago?
Resources	Edexcel GCSE (9-1) students book Interactive power point from Board works Active learn ALDS video *SP6d Background radiation* Worksheet SP 6d.3
Specific Learning objectives	**Lesson 3 and 4 . SP6e. Types of radiations** **Specific Learning objectives** Know that alpha, β- (beta minus), β+ (positron), gamma rays and neutron radiation are emitted from unstable nuclei in a random process. Realise that alpha, β- (beta minus), β+ (positron) and gamma rays are ionising radiations. Understand that an alpha particle is equivalent to a helium nucleus, a beta particle is an electron emitted from the nucleus and a gamma ray is electromagnetic radiation. Compare alpha, beta and gamma radiations in terms of their abilities to penetrate and ionise.
Specific intended learning outcomes	**Specific Intended Learning Outcomes** Recall the relative masses and relative electric charges of protons, neutrons and electrons List five types of radiation that are emitted in random processes from unstable nuclei. State which types of radiation are ionising radiations.

	Describe what alpha, beta and positron particles are. Compare the penetrating abilities of alpha, beta and gamma radiation. Compare the ionisation abilities of alpha, beta and gamma radiation. Tabulate the differences between alpha, beta and gamma in terms of their relative mass, relative charge, penetrating and ionising abilities
Tasks	**<u>Tasks</u>** 1. Define radioactive decay. 2. Watch ALDS presentation *SP6e Ionising and penetrating radiation* . Tabulate the relative charge and relative mass of five different types of radiations emitted from atomic nuclei 3. Summarise the ionisation and penetration properties of alpha, beta and gamma radiations 4. Solve the worksheets Sp 6e 3 or 5
Assessment Criteria/ Essential questions	**Support:** S1 and S2 in students book Worksheet 6e.3 que. 1-4 **Stretch:** E1 in students book and Worksheet 6e. 5 1&2 **Extend** : What are cloud chamber. (Worksheet 6e.5 Question 3)
Resources	Edexcel GCSE (9-1) students book Interactive power point from Board works Active learn ALDS video *SP6e ionising and penetrating radiations* Worksheet SP 6e.3 and 5

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Physics**
Class/ Section	**Year 11- A - F**
Week	**Week 3- 12th September to 16th September,2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**5**
Unit/Topic	SP 7c – Life cycle of stars SP7d – Red- shift SP 7e – Origin of the Universe
Key Vocabulary	Red giant, white dwarf, supernova, , black hole, neutron star, pitch, Doppler effect, red shift , Big Bang theory, Steady state theory, Cosmic microwave background radiation.
Lessons 1,2,3,4 and 5 –Live Zoom lesson along with face to face instruction for students present on a particular day **Work will be assigned in google classroom which will be matched to the students' ability.**	**Lesson 1:** **Specific Learning objectives** 7.16P Describe the evolution of stars of similar mass to the Sun 7.18P Describe the evolution of stars with a mass larger than the Sun **Specific Intended Learning Outcomes** • Describe why Stars will have shorter life spans with larger stars and longer life spans with smaller stars. • Describe the formation of red giant and explain why this stage is unstable. • Describe the final stages of a star similar to the Sun • Describe the final stages of a massive star – supernova, neutron star and black hole. • Compare and contrast the evolution of small as well as massive stars **Tasks** 1. Asks the students to draw a diagram which shows the balance of forces in a star such as the Sun. 2. Asks students to predict what happens to a star when nuclear

Assessment Criteria/Essential questions	reactions in the core stop. 3. Use the Doddle interactive power point/plays the video . 4. Students will make a flowchart for the final stages of the star. 5. Students will compare and contrast the life cycles of stars of different masses. **Support:** Point out that the differences in the life cycles of stars with different masses are mainly after the red giant/red supergiant phase. ***Stretch***: Ask students to find out and explain why neutron stars have that name. **Extend:** A comparative study of the evolution of star like sun and massive star than sun. Present their findings in a concept map.
Resources	Edexcel GCSE 9-1 Physics Text book, worksheet, interactive power point.
Assessment Criteria/ Essential questions:	**Lesson 2 and 3** **Specific Learning objectives** 7.11P Describe that if a wave source is moving relative to an observer there will be a change in the observed frequency and wavelength 7.12P -7.13P Describe the red-shift in light received from galaxies at different distances away from the Earth and explain why the red-shift of galaxies provides evidence for the Universe expanding **Specific Intended Learning Outcomes** • Describe how the movement of a wave source affects the observed frequency and wavelength. • Describe the amount of red-shift observed in galaxies at different distances from Earth. • Explain why the red-shift of galaxies provides evidence that the Universe is expanding. **Tasks.** 1. Displays a short clip from Doddle. 2. Asks students to describe what they hear, and then ask them how the pitch of the sound is related to the wavelength of the sound. 3. Use doddle interactive power point and group discussion on Doppler effect &What is red-shift? How does the red-shift of galaxies suggest that the universe is expanding? **Support**: Help the students to make the conclusion from the diagrams C and D (student book) ***Stretch***: Ask students to write a couple of sentences to explain why telescopes used to investigate the most distant galaxies have to have infrared sensors. **Extend:** Explain the term blue- shift.

Resources	Edexcel GCSE 9-1 Physics Text book, worksheet, interactive power point.
Assessment Criteria/ Essential questions:	**Lesson 4 and 5:** **Specific Learning objectives** 7.8P Compare the Steady State and Big Bang theories. 7.9P Describe evidence supporting the Big Bang theory, limited to red-shift and the CMB) radiation. 7.14P Explain how both the Big Bang and Steady State theories of the origin of the Universe both account for red-shift of galaxies. 7.15P Explain how the discovery of the CMB radiation led to the Big Bang theory becoming the currently accepted model. **Specific Intended Learning Outcomes** • Describe the Steady State and Big Bang theories. • Compare the Steady State and Big Bang theories. • Describe the evidence supporting the Big Bang theory. • Explain why the Big Bang theory is the currently accepted model. Explain how both theories of the origin of the Universe account for red-shift. • Explain how the discovery of the CMB radiation led to the Big Bang theory becoming the currently accepted model. **Tasks.** 1.Q&A session to recall the concept Red- shift 2. Research in groups and compare the steady state theory and Big Bang theory by using card sorting activity. 3. Asks questions to differentiate & understand the Currant bun model and balloon model. 4. Use the interactive power point to explain the discovery of the CMB radiation led to the Big Bang theory becoming the currently accepted model. 5. Students will describe the evidence supporting the Big Bang theory. **Support**: Go through the presentation with students, asking supplementary questions. ***Stretch***: Ask students to write a paragraph summarising the strengths and weaknesses of the modelsdiscussed **Extend:** question E1 in the Student Book
Resources	Edexcel GCSE 9-1 Physics Text book, worksheet, interactive power point

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Subject	**Physics**
Class/ Section	**Yr 12 – Batch 1 and 2**
Week	**Week 3 : 12th September to 16th September, 2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**3.1 Electrical energy transfer**
Key Vocabulary	**Drift velocity, electron volt**
	Lesson 1 and 2: **Specific Learning objectives:** • Evaluate a model of electrical circuits. • Derive an expression for the current flowing in terms of drift velocity and carrier density. **Specific Intended Learning Outcomes:** • Define the electron volt. • Recognize that voltmeters are connected in parallel to measure voltage across a conductor & compare with use of ammeter • State what is meant by the term mean drift velocity of charge carriers. • Identifies the relationship between drift velocity and current. • Use the expression $I = Anev$ and $I = \Delta Q / \Delta t$ to solve problems **Tasks 1:** 1. Use standard form and to discuss examples from particle physics, including use of prefixes like GeV. *Answer questions 3 a and b in the notebook* 2. Students, in pairs, to set up a variety of circuits with series and parallel elements and to measure the voltage between a range of points in each circuit. *Use online simulation* 3. Emphasise the idea that potential differences and emfs are measured between two different points in the circuit, such as either side of a component **Tasks 2:** 1. Teacher introduce the term drift velocity of charge carriers 2. Derive the transport equation and use it to calculate the drift velocity of electrons in a metal such as copper. 3. Use the equation $I = nAve$ to solve the questions in the

Assessment Criteria/ Essential questions:	given worksheet. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning. **Support :** The idea of an electric current as a rate of flow of charge is crucial to the understanding of the transport equation. **Stretch -** Suggest why the drift velocity in semiconductors is orders of magnitude higher than in metals. **Extend –** research electrical and thermal conductivities and to display their results on a suitable scatter graph.
Resources:	Edexcel AS/A level Physics 1 Textbook Interactive power point from Board works
Assessment Criteria/ Essential questions:	**Lesson 3: Electric current** **Specific Learning objectives:** • state Ohm's law • calculate resistances **Specific Intended Learning Outcomes:** • Use Ohm's law V = I R • Realise that the resistance of a component is a measure of its opposition to the flow of charge through it. • Realise that resistance remains constant only if temperature is constant. • Draw and interpret VI graphs for metal wire **Tasks:** 1. Demonstrate how a lamp can be controlled using a rheostat or variable resistor. 2. Define 'resistance' using $R = \frac{V}{I}$. Hence state Ohms law. 3. Plan and draw the circuit diagram so that it can be used to calculate resistance of a wire. Identify the quantities to be measured. 4. Students investigate the *I*–*V* characteristic for an ohmic conductor and plot a characteristic graph using the secondary data provided. 5. Discuss the condition for Ohms to be valid and also that reversing the component and reversing the polarity are equivalent methods. **Support** – Students might confuse the gradient of an *I*–*V* curve for an ohmic conductor with the resistance rather than the reciprocal of the resistance of the conductor. **Stretch -** Explore the reasons why resistance varies with temperature in metals **Extend –** Students could research into how overhead transmission cables are constructed and the reasons for the materials used.
Resources:	Edexcel AS/A level Physics 1 Textbook Interactive power point from Board works https://www.youtube.com/watch?v=ZDALtCd1M-U

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Physics**
Class/ Section	**Yr 12 – Batch A/B**
Week	**Week 2 : 12th Sept to 16th September, 2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**1.2 Estimation** **2.1 Velocity and acceleration**
Key Vocabulary	Scalar , vector , speed, displacement, velocity, average speed, instantaneous speed, acceleration
Lessons 1,2,3 –Live Zoom lesson along with face to face instruction for students present on a particular day **Work will be assigned in Google classroom which will be matched to the students ability.**	**Lesson 1: carried over** **Specific Learning objectives:** • Estimate values for physical quantities and use their estimate to solve problems. **Specific Intended Learning Outcomes:** • Identify what is meant by Fermi questions? **Tasks:** Recap that the power of lens of the estimate is the same as the true value 1. Complete the questions (pg 13) assigned from the Physics 1 text book in the notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning. 2.Teacher introduce Fermi Questions and provide few examples 3. Students solve the given Fermi questions from the worksheet. ***Support :*** *Arrange the given estimates in the order of magnitude* ***Stretch:*** Estimate the density of air in a room. **Extend:** Estimate the volume of the given container and also estimate the number of items that can be filled in it.
Assessment Criteria/ Essential questions:	
Resources:	Edexcel AS/A level Physics 1 Textbook Interactive power point from Board works

Assessment Criteria/ Essential questions	**Lesson 2:** **Specific Learning objectives** Distinguish between scalars and vectors Define distance, displacement, speed and velocity **Specific Intended Learning Outcomes** State examples of scalars and vectors Use vectors with correct signs in numerical questions. Distinguish between instantaneous speed and average speed. Calculate total displacement, total distance and average speed of moving objects. Identify a vector by considering direction or rate of change, from various quantities. **Tasks** Show video of very fast and very slow moving objects and ask students to estimate their speeds –use padlet platform to collaborate the suggestions. 1. Review of simple speed, distance, time calculations 2. Recall vector and scalar quantities giving examples including distance/displacement and speed/velocity. 3. Introduce motion parameters. Describe the concept of motion as change of position with time. Compare the pickup of different vehicles with numerical examples. 4. Introduce velocity as rate of change of displacement and the difference between velocity and speed. 5. Explain the difference between average velocity and instantaneous velocity. 6. Describes how to assign sign convention to different vectors. 8. Develop an understanding of conversion of units like km/hr to m/s. **Students:** To explore linear, non linear and circular motion to identify vectors like displacement, velocity etc. with valid reasoning- **Group discussion.** ***Support:*** *Skim through some worked examples* and grasp the problem solving techniques Practise simple calculations of speed, distance and time. ***Stretch:*** Q1 from the Student Book. **Extend:** Research the definitions of ‘metre’ and ‘second’. Students should practise calculations of average speed, velocity and speed and acceleration, Worksheet Questions will be assigned in GC.
Resources:	Edexcel AS/A level Physics 1 Textbook Interactive power point from Doodle learn.

	Lesson 3 **Specific Learning objectives:** Define acceleration and identify its vector nature. **Specific Intended Learning Outcomes:** State examples of accelerating and decelerating objects. State the unit of acceleration Use a = v-u/t in numerical problems. Identify positive and negative acceleration. Distinguish between uniform and non uniform acceleration. **Tasks:** 1. Compare the accelerations of new models of cars to introduce acceleration such as Ultima Evolution Coupe ,Dodge Challenger Bugatti Chiron & Ferrari SF90 Stradale 2. Illustrate the difference between uniform and non uniform acceleration with appropriate data.-Breakout sessions 3.Discuss the difference between positive and negative acceleration 4.Analysis of a multi-flash photograph & Practice with calculations 5. The motion of a ball thrown vertically and caught can be used to consolidate and help the understanding of velocity and acceleration, for example: 'How can the ball be accelerating downwards whilst moving upwards?
Assessment Criteria/ Essential questions:	***Support :*** *Skim through some worked examples* and grasp the problem solving techniques Practise simple calculations of speed, distance and time. ***Stretch:*** Q1 from the Student Book. **Extend:** Consider vector acceleration in circular motion: 'How can something have constant speed but be accelerating?' **Resources:** Edexcel AS/A level Physics 1 Textbook Interactive power point from Board works

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan

Subject	**Physics**
Class/ Section	**Yr 13 – Batch A/B**
Week	**Week 2 : 12th September to 16th September, 2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**6.1 Further Momentum** **6.2 Circular Motion**
Key Vocabulary	Impulse, Momentum conservation ,vector addition, circular motion
Lesson 1,2,3 **Live Zoom lesson along with face to face instruction for students present on a particular day** **Work will be assigned in google classroom which will be matched to the students' ability.** **Assessment Criteria/ Essential questions:** **Resources:**	**Lesson 1(contd..):** **Specific Learning objectives:** Analyse and interpret data to calculate the momentum of (non-relativistic) particles and apply the principle of conservation of linear momentum to problems in two dimensions **Specific Intended Learning Outcomes:** Resolve velocities into components and construct and solve equations for conservation of momentum in two dimensions Determine the final velocity and direction of one colliding object after a collision with another object at an angle. **Task:** 1. Students to resolve some simple force vectors and velocity vectors into perpendicular components. **2.** Recap the problem solving techniques in conservation of momentum in two dimensions and complete the worksheet file questions **Support:Use** an impact that occurs at right angles to simplify the analysis. **Stretch:** Qn……., worksheet file. **Extended:** Three-dimensional problem can be analysed in a similar way to the two-dimensional examples collisions between sub-atomic particles can be truly elastic. Edexcel A level Physics 2 Textbook Interactive power point from Board works

Assessment Criteria/ Essential questions: **Resources:**	**Lesson 2** 1. Discuss whether momentum is conserved in the collisions at anglesand how the collisions may be analysed. **2.** Discuss Core practical 10. **3.** Ask students to investigate the collisions between ball bearings using the techniques outlined on the Practical sheet. **4.** Provide assistance to be able to use the sine and cosine functions to calculate components. **5.**Construct a momentum vector triangle and use it to see if it closes (meaning momentum is conserved). You can also use the vector triangle to consider energy. Student book page 13 **Support:** Question number …… **Stretch:** Question number …… **Extended** Explain why collisions between sub-atomic particles can be truly elastic. **Research on:** One proposed method of adjusting the path of an asteroid is 'painting' part of it in a lighter colour so that it is more reflective on one side than the other. Students could research how this method is meant to work and whether it is more or less viable than a dramatic impact (or even a nuclear weapon). Edexcel A level Physics 2 Textbook Interactive power point from Board works
Assessment Criteria/ Essential questions:	**Lesson 3:** **Specific Learning objectives:** Explain the concept of angular velocity, and recognise and use the relationships $v = \omega r$ and $T = 2\pi/\omega$ **Specific Intended Learning Outcomes:** Express angular displacement in radians and in degrees, and convert between these units Define angular velocity, and make calculations using it. **Tasks:** 1.Students measure some simple angles in degrees and convert the measurements to fractions of a full circle 2. Define the radian, linking this to the circle. 3. Link angular velocity to instantaneous velocity and ask students to attempt a few examples. **4.** Students can calculate the angular velocity of various real life objects in circular motion. **Support:** Ensure that all students can convert between radians and degrees. Ensure students understand the difference between a positive value and a negative value. **Stretch:** Self/Peer assessment - question # 7 from the worksheet 1 . The worksheet 1 questions 1-6 can be used to conduct a quiz

Resources:	**Extension:** This must be linked to the period of one complete rotation, and from there to the frequency. Edexcel A level Physics 2 Textbook Interactive power point from Board works

مدرسة القديسة مريم الكاثوليكية الثانوية – دبي

ST. MARY'S CATHOLIC HIGH SCHOOL, DUBAI

Lesson Plan 2021-22

Subject	**Physics**
Class/ Section	**Yr 13 – Batch 1 and 2**
Week	**Week 3 : 12th Sept – 16th September, 2021**
Work send to students by	**Google classroom**
Total number of lessons per week	**3**
Unit/Topic	**7.1 Electric fields**
Key Vocabulary	Electric field, Electric field lines, Electric field strength,
Lesson 1,2,3 - Live Zoom lesson along with face to face instruction for students present on a particular day **Work will be assigned in google classroom which will be matched to the students' ability.**	**Lesson 1 - 2: Uniform electric fields** **Specific Learning objectives:** • Describe the concept of a uniform electric field. • Use the equation $E = \frac{V}{d}$ for uniform electric field strength between parallel plates. **Specific Intended Learning Outcomes:** • Describe how uniform electric field can be produced between two parallel plates which have a pd between them • Select and use= V/d for the magnitude of the uniform electric field strength between charged parallel plates. • Recognise that the potential drops uniformly with distance and hence predict the graph of potential against distance. • Draw field lines between parallel plates. **Tasks:** 1. Discuss uniform electric field produced between two parallel plates which have a pd between them. 2. Students represent uniform electric fields by drawing parallel equidistant

Assessment Criteria/ Essential questions:	field lines. 3. Explain Electric field strength E in a uniform field given by $E = Vd$ 4. Students derive the eqn from work done moving charge between plates: $Fd = Q\Delta V$ 5. Sketch graph of V against d and realise that the gradient of the graph gives electric field strength. 6. Discuss that electric field due to a point charge is radial and that between parallel plates is uniform 7. Complete the questions 2-3 (pg 43) assigned from the Physics 2 text book in the notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning. **Support** – Show that the units NC^{-1} and Vm^{-1} are equivalent. **Stretch** - State that the field strength of the uniform field at a point is equal to the negative of potential gradient at that point. **Extend –** Students can investigate the patterns of various field configurations using conducting paper (2D) or electrolytic tank (3D).
Resources:	Edexcel A level Physics 2 Textbook Interactive power point from Board works, ppt – electric fields
Assessment Criteria/ Essential questions:	**Lesson 3: Electric fields** **Specific Learning objectives:** • Review and revise electric field. **Specific Intended Learning Outcomes:** • Students will be able to reinforce the concepts learned in the previous lesson by solving the worksheet. **Tasks:** 1. Discussion of text book and worksheet questions - Worksheet will be assigned in GC. 2. Students skim through some worked examples and grasp the problem solving techniques. 3. Edexcel Physics A-level unit 4 – June 2011 QP –ques 16 - The spreadsheet shown approximately models the behaviour of an alpha particle as it approaches a gold nucleus. **Support:** Sketch the electric field surrounding the gold nucleus. **Stretch:** Calculate the force between the alpha particle and the gold nucleus at a particular distance. **Extend:** Calculate the speed of alpha particle at the distance of closest

	approach. Hence suggest a value for the maximum radius of a gold nucleus based on the results from this spreadsheet**.**
Resources:	Edexcel A level Physics 2 Textbook Interactive power point from Board works, ppt – electric fields