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| **COURSE PLAN**  LESSON/OBJECTIVE: PHYSIC  COURSE Duration: 1 teaching hour | | | |
| **Subject/**  **Name of teaching part** | Mass- Weight | *ΤΑΞΗ:* | 1st Grade of Middle school |
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| ***Course Objectives*** | | | |
| *Α. According to the subject matter* | The aim of the course plan is the distinction on behalf of the student between the physical quantities like mass and weight and their units of measurements. | | |
| *Β. According to the use of new technologies* | - The use of YouTube as educational tool  - Digital camera to record the experiments  - Video production | | |
| *Γ. The learning process* | Students will be able to know that:   * The mass equals to the weight * We measure the weight in kilos * The weight of things’ is related to their mass * The weight doesn’t change | | |
| ***Class Organization*** | | | |
| The suggested teaching methodology is the approach in five phases   1. The phase if orientation. 2. The phase of the students’ ideas 3. The phase of reconstruction of the students’ ideas 4. The phase of application 5. The phase of review | | | |
| ***Tools and Software used*** | | | |
| Used  Computers  Digital camera  Wooden pencil cases, pencils, bottles with water, watercolors, a, rope, dynamometer, plumps 0,1 kg, 0,2kg, 0,5kg, 1kg. | | | |
| **PHASES-STEPS** | | | |
| 1. INTRODUCTION- (preparation/ brief introduction/to stimulate the students interest) | | | |
| The teacher asks from the students to explain everyday phenomena according to their own experience. In this way thereis a variety of ideas. The students are encouraged to compare their ideas to the experiments in order to change their ideas. | | | |
| 1. DETAILED PRESENTATION | | | |
| **Activity 1**  **Materials: 2 same wooden cases, pencils**  We put the two cases ( one empty and one full) on the table  We make hypothesis about their weight.  Is there a way to find which one is the heaviest without picking it up?  We ask students to guess the weight of the pencil case approximately.  **Activity 2**  We show a video of astronauts walking on the moon <https://www.youtube.com/watch?v=Kp2LHRJCWsM>  We make the following questions:  Do the astronauts have weight while on the moon?  Why do they walk in a strange way?  Do astronauts have less mass or weight and why?  **Activity 3**  **Materials:**2 plastic bottles with water, watercolors**,**  stud with a vertical rod, water, rope  We paint the bottles, in the same color. We pour a small quantity of water in the one bottle and we fill the other. We hang both bottles on the rod. We ask the students how we can tell which bottle is heavier without picking them. We urge them to push them. What do they see? What’s the reason of the different level of difficulty, the mass or the weight?  Does the weight have a certain direction? Which is this?  Does the mass have direction?  **Activity 4**  **Materials:** dynamometer, plumbs,0,1kg, 0,2kg, 0,5kg, 1kg  We hang all the plumbs successively and write down their corresponding measuraments of the dynamometer.  What’s the correlation between the weights of the plumbs of the dynamometre in Newton with the corresponding mass in kilos?  If we divide the weight of the plumbs with their mass, what do we find out?  Why do the results approach a certain number? | | | |
| 1. GUIDANCE PRACTICE/TRAINING | | | |
| * Ask from the students in groups of four to write down the answers of all the above activities. This way they have the chance to revise and to cooperate together. * They record them in a computer file.   We appload the results on the school website so as the students can visit the site , watch the videos of their avtivities and see the right answers and have time for comprehension and feedback. | | | |
| 4.CLOSING AND RESTATING WHAT HAS BEEN LEARNED | | | |
| We thank our students and praise them for showing interest and for their cooperation with their classmates and with their teacher. We promise that the next lessons will be very important and interesting. | | | |
| ***ADDITIONAL NOTES*** | | | |
| *ICT and Technology*  *(used in the class)* |  | | |
| ***For Special Educational Needs***  *(change teaching methods based on the learning needs of each individual student with SEN)* | Lesson time 2-3 hours so as the students be in order to have enough time to comprehend. | | |
| ***HOMEWORK/WRITTEN PRODUCTION*** | | | |
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\*the structure of the lesson plan is based on the “Hunter method”