Observational cube seat. 1. Learning Outcomes The Module Learning Outcomes are to: · Integrate a wide and mission driven knowledge base of multi-disciplinary space engineering for developing and analysing space missions (SM1p, SM3p, EP4p) · Conceive, define and evaluate space missions (EA4p) · Use a variety of simulation tools for mission and vehicle design from concept to operation (SM2p, EA3p) · Validate and analyse designs created in the operating space environment and in planetary atmospheres. (EA2p, D3p, ET4p) 2. Background/Context The aim of the project is to provide some experience of designing a mission for outer space. Space missions are complicated with many disciplines involved and often rely on the expertise of a large number of engineers and scientists, often across various countries. In this module we look at one experiment as the payload on a CubeSat in Low Earth Orbit using accepted professional system engineering methods, and industry standard technical approaches. The experiment should be the use of a chosen sensor to observe either the ground or the atmosphere. The information gathered should be relayed back to Earth. 3. Requirements You are required to study an aspect of planning an Earth observational mission of a 2U/3U CubeSat from concept to compliance (i.e. end of mission). The payload is a sensor. It is recommended to concentrate on the initial parts of the cubesat mission including the orbit and the sensor. In order to map out what is required for this assignment, you are strongly advised to talk with the lecturers supporting this module before you start and to maintain contact during the work. You must decide on the following: · The CubeSat must be 2U or 3U · The equipment used should be “Commercial off the shelf” as much as possible. · The CubeSat is assumed to be launched on a typical commercial rocket. · What your payload is. Depending on what aspect you are taking on to study, aspects to consider are: · How the cubesat works and what it needs to function, · What systems and materials your payload is comprised of, · How it is contained in the CubeSat, · For how long your experiment will last, · When the CubeSat will switch on and when it finishes, · What trajectory you want it to take, · How it will be launched, · An estimate of how much it will cost, · How it will be disposed of after its mission is completed in a legal and safe fashion. Also consider whether the following are applicable to your aspect. For example the need to prove the cubesat: · will successfully reach orbit, · will operate successfully and not get too cold or too hot, · will not break up, · will stay in the chosen orbit and not leave the orbit too early, · will be stable in its orbit, · will be able to communicate with the home base, · will receive and transmit all required data at the correct time on the selected frequencies. 4. Project Structure Marking The viva is worth 25% and the report 75%. Note that this module is a “two-component” module, where the viva is component A, and the report is component B of the module. In order to pass the module (from the UWE regulations): “If a student achieves less than 35% in a component, has a mark of 40% or higher for the module and has a resit available, they must resit that component. If the student achieves between 35% but less than 40% in both of the components, they cannot achieve the module pass mark and if eligible, must resit both components.” Both the report and the viva will be allotted individual marks. 5. Submission/Report Information The submission deadline is 2pm on July 18th Your submission will be run through SafeAssign to help assess originality. Your submission will be graded according to the marking criteria listed at the end of this specification. 5.1. Submission Requirements and Files The assessments are: 1. An individual report of maximum 2000 words. 2. A reflective statement limited to 500 words and this limit is not considered part of the 2000 word report. 3. An individual viva of up to 30 minutes which is held online after the report deadline. 5.2. Limitations The word limit for the report is 2000 words including abstract and text in the main body of the report and appendices. · Information on Figures, diagrams and tables are exempt from the word count. · Nomenclature, glossary, abbreviations, references and bibliography are also exempt from the word count. · The report should be in a font no less than 10pt with “normal” MS Word margins. · The submitted format must be in .doc or ,pdf format 5.3. Plagiarism, Collusion, Contract Cheating, Falsification and Fabrication Please note that plagiarism, collusion, contract cheating, falsification and fabrication are assessment offences. Ensure you are familiar with this policy (see http://www2.uwe.ac.uk/services/Marketing/about-us/pdf/Policies/Assessment\_offences\_policy.pdf) At the time of writing, the policy lists some (but not exclusively) examples of plagiarism as “Copying from another person’s work without the use of quotation marks; “Copying from another person’s work without referencing/acknowledgement of the sources; “Summarising another person’s work by simply changing a few words or altering the order of presentation, without acknowledgement; “Paraphrasing material from a source without acknowledging the original author; “Presenting concepts or designs that have been created by others without acknowledging the original source; “Copying another student’s work with or without their knowledge or agreement (this may also be deemed as collusion); “Using computer code created by another person without appropriate referencing; “Downloading material from the web and submitting it as your own work;” 6. Hints, Additional Details, Tips and FAQs Please ask the module tutors if you need help. We will use Blackboard to store useful material for the assignment along with tips, some examples and technical guidance.