**Global Learning Initiatives Program Course Syllabus**

Please complete the following form in English. The information will be updated to the Global Learning Initiatives Program website for students’ reference. If you will be offering more than one course, please fill out one form per course offered. Examples in grey.

**Course Information**

|  |  |
| --- | --- |
| Course Name  \*provide the **English** course name of the course. | Radiation Effects in Electronics |
| Lecturer(s)  \*provide the lecturers’ **English** name. If there are more than one lecturer, please indicate all lecturers in the column. | Chin-Han Chung |
| Course Description  \*briefly describe the contents covered in the courses. | Electronic devices need to be considered for reliability issues against radiation before they can be implemented in space or nuclear facilities. This lecture will introduce the general scope of this research field from the definition and source of radiation to the physical impact it induces in semiconductor devices. |
| Course Objectives  \*list out knowledge or skills students should acquire upon completion of course. | To understand the hazardous effects and reliability issues caused by radiation in electronic devices and how to mitigate them for the applications such as nuclear power facilities and space |
| Suggested Proficiencies  (if any)  \*list preferred knowledge or skills students should have before taking the course. | Fundamental semiconductor physics |
| Reading List  (if any)  \*list out the textbooks, references, or other reading materials. | Terrestrial Radiation Effects in ULSI Devices and Electronic Systems, Eishi H. Ibe, Published by Wiley in 2015 |
| Grading Criteria  \*how would the students be assessed during the course. | Midterm exam (30%)  Final report (30%)  Final exam (40%) |

**Course Schedule**

Please complete the following table with the dates and expected course topics. If there are more than one lecturers instructing the course, please also indicate the lecturer for each class.

|  |  |  |  |
| --- | --- | --- | --- |
| Class | Date (YYYY/MM/DD) | Course Topic | Lecturer |
| 1 | 2023/02/17 | Lecture Introduction | Chin-Han Chung |
| 2 | 2023/02/24 | Radiation Basics | Chin-Han Chung |
| 3 | 2023/03/03 | Radiation Basics | Chin-Han Chung |
| 4 | 2023/03/10 | Fundamentals of Radiation Effects | Chin-Han Chung |
| 5 | 2023/03/17 | Fundamentals of Radiation Effects | Chin-Han Chung |
| 6 | 2023/03/24 | Radiation Test Methods | Chin-Han Chung |
| 7 | 2023/03/31 | Radiation Test Methods | Chin-Han Chung |
| 8 | 2023/04/07 | Midterm | Chin-Han Chung |
| 9 | 2023/04/17 | Field Trip to Testing Facilities | Chin-Han Chung |
| 10 | 2023/04/21 | SRIM & TRIM | Chin-Han Chung |
| 11 | 2023/04/28 | SRIM & TRIM | Chin-Han Chung |
| 12 | 2023/05/05 | Radiation Effects in Memories | Chin-Han Chung |
| 13 | 2023/05/12 | Radiation Effects in Memories | Chin-Han Chung |
| 14 | 2023/05/19 | Radiation Effects in GaN Devices | Chin-Han Chung |
| 15 | 2023/05/26 | Radiation Effects in GaN Devices | Chin-Han Chung |
| 16 | 2023/06/02 | Final Exam | Chin-Han Chung |
| 17 | 2023/06/09 | Final report | Chin-Han Chung |
| 18 | 2023/06/16 | Final report | Chin-Han Chung |