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| **Unit Title** | Machine Drives and Mechatronics |
| **Level** | 5 |
| **Reference No.**  ***(showing level)*** | EEA\_5\_979 |
| **Credit Value** | 15 |
| **Student Study Hours** | Contact hours: 52  Student-managed learning hours: 98 |
| **Pre-requisite learning** | Mechanical Principles |
| **Co-requisites** | None |
| **Excluded combinations** | None |
| **Unit co-ordinator** | Shyamal Mondal |
| **Faculty/Department** | ESBE / Engineering & Design |
| **Short Description** | This unit provides the fundamental; theory and calculations behind essential elements of mechanical design e.g. mechanical drives, transmission systems, fixings and simple mechatronics |
| **Aims** | * To extend the student’s knowledge and understanding of machine drives and transmission systems. * To introduce the field of mechatronics. * To foster and develop the student’s capacity for conceiving innovative mechanical engineering design solutions through the use of laboratory experiments and case studies |
| **Learning Outcomes** | **Knowledge and Understanding**  The student should be able to demonstrate mechanical design techniques applied to a range of components fundamental to the successful function of mechanical systems  **Intellectual Skills**  The student should be able to apply their knowledge of engineering principles to analytically and quantitatively analyse the components of mechanical systems  **Practical Skills**  The students’ will perform laboratory experiments on gears, cams and linkages, taking the necessary measurements and analysing the results. Reverse engineering of mechanical systems through practical hands-on examples.  **Transferable Skills**  All the skills from this unit are essential for any student hoping to practice as an engineer and are applicable to a very wide range of engineering disciplines |
| **Employability** | TBC |
| **Teaching and learning pattern** | TBC |
| **Indicative content** | * Mechanical design methodology, power transmission, gears, pulleys, shafts, keyways, couplings, seals, lubrication, wear, winches, belt and chain drives, clutches, brakes. * Introduction to mechatronics * Electromechanical interfacing, sensors and PLCs |
| **Assessment**  ***Elements & weightings*** | There are two elements of assessment:  End of semester examination – 50%  Coursework – 50% |
| **Indicative Sources**  ***(Reading lists)*** | TBC |