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| **Faculty** | Natural Sciences | | | |
| **Home Department** | Mathematics & Applied Mathematics | | | |
| **Module Topic** | Stochastic Calculus for Finance | | | |
| **Generic Module Name** | Stochastic Calculus for Finance 714 | | | |
| **Alpha-numeric Code** | **COF714** | | | |
| **NQF Level** | 8 | | | |
| **NQF Credit Value** | 15 | | | |
| **Duration** | Semester | | | |
| **Proposed semester to be offered.** | First Semester | | | |
| **Programmes in which the module will be offered** | BSc Hons (Mathematical Science) (3736); BSc Hons (Computational Finance) (3739) | | | |
| **Year level** | 7 | | | |
| **Main Outcomes** | On completion of this module students should be able to:<br>• Have a working knowledge of Ito calculus including stochastic control. | | | |
| **Main Content** | • Probability spaces<br>• Random walk and Brownian motion<br>• Discrete and continuous martingales<br>• Stopping times<br>• Quadratic variation<br>• Ito integral and basic formulae<br>• Stochastic differential equations<br>• Black-Scholes theory<br>• Stochastic control: formulae and applications | | | |
| **Pre-requisite modules** | None | | | |
| **Co-requisite modules** | None | | | |
| **Prohibited module Combination** | None | | | |
| **Breakdown of Learning Time** | **Hours** | **Timetable Requirement per week** | | **Other teaching modes that does not require time-table** |
| *Contact with lecturer / tutor:* | 30 | *Lectures p.w.* | 2 | |
| *Assignments & tasks:* | 25 | *Practicals p.w.* | 1 | |
| *Practicals:* | 15 | *Tutorials p.w.* | 0 | |
| *Tutorials:* | 0 | | | |
| *Assessments:* | 8 | | | |
| *Selfstudy:* | 72 | | | |
| *Other:* | 0 | | | |
| **Total Learning Time** | **150** | | | |
| **Methods of Student Assessment** | Continuous Assessment (CA): 60%<br>Final Assessment (FA): 40% | | | |
| **Assessment Module type** | Continuous and Final Assessment (CFA) | | | |