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| **COURSE CODE** | EG501V |
| **COURSE TITLE** | Computational Fluid Dynamics |
| **COURSE CO-ORDINATOR** |  |

**OVERVIEW**

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| **COURSE OVERVIEW** |
| ***[80-100 word limit]***  ***The Course Overview is a marketing description. The overview should provide a concise relevant and helpful summary to allow students to quickly understand the basics and about the course and make an informed choice about whether it is the right option for them (this may be expanded upon in the Course Description and Further Information and Notes sections as appropriate).***  The course aims to provide understanding of main principles and techniques underpinning computational fluid dynamics (CFD) combining numerical methods with practical experience using appropriate software. The course develops a foundation for understanding, developing and analysing successful simulations of fluid flows applicable to a broad range of applications. |
| **WHAT COURSE(S) MUST HAVE BEEN TAKEN BEFORE THIS COURSE?** |
| Pre-Requisite: EG3007 (Engineering, Analysis and Methods) and EG3018 (Fluid Mechanics A) OR registered for PGCert, PgDip or MSc in Process Safety OR registered for PGCert, PgDip or MSc in Subsea Engineering. |
| **WHAT OTHER COURSES MUST BE TAKEN WITH THIS COURSE?** |
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| **WHAT COURSES CANNOT BE TAKEN WITH THIS COURSE?** |
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| **ARE THERE A LIMITED NUMBER OF PLACES AVAILABLE?** |
| NO |

**DESCRIPTION**

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| **COURSE DESCRIPTION** |
| ***There is no word limit for these sections. Please do not add information to these sections that repeats or contradicts approved curriculum or assessment requirements which have been added to other relevant sections of the catalogue.***  The course will provide insight into physical phenomena in environmental and industrial fluid flows via numerical simulations. Whist this motivates the use of computational technologies, even advanced CFD software may lead to incorrect predictions of fluid flow behaviour if used without sufficient understanding of the underlying algorithms and methods. This course introduces students to computational methods for solving distinct type of partial differential equations (PDE) that arise in fluid dynamic studies.  This course will involve fundamentals of numerical analysis of PDE, introduction to computational linear algebra, discretisation techniques and numerical schemes to solve time-dependent PDE problems, error control and stability analysis, mesh-generation methods and turbulence models. Hands-on sessions with industry standard software are used to develop CFD skills. |

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| **FURTHER INFORMATION & NOTES** |
| ***ie for students taking MSc Oil & Gas Engineering programme*** |

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| **DEGREE PROGRAMMES FOR WHICH THIS COURSE IS COMPULSORY** |
| This course is compulsory for all the following programmes:  (a) Degree of Master of Engineering in Chemical Engineering;  (b) Degree of Master of Engineering in Mechanical Engineering;  (c) MSc in Process Safety Engineering. |

**TEACHING**

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| **TEACHING TIME** |
| ***Ignore this field – this will be populated at a later date*** |
| **TEACHING BREAKDOWN** |
| ***Ignore this field – this will be populated at a later date*** |

**ASSESSMENT**

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| **ASSESSMENT** |
| 1 two-hour written examination paper (40%) and continuous assessment (60%).  The continuous assessment (CA) will consist of 2 components:  • Problem solving programming exercise (20%);  • Individual reports on assigned Engineering problem involving CFD simulation (40%).  Students are required to pass both the examination and the continuous assessment in order to pass the course. A fail in the exam will not be condoned by a pass in other elements of assessment. In the case of a fail in any element of assessment the overall course grade will be limited to E1. |
| **FORMATIVE ASSESSMENT** |
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| **FEEDBACK** |
| ***ie The course includes a workgroup exercise on assessment of essays.  Students must sit a mock exam in-class. Students receive individual, written feedback on their coursework. We also provide whole-class feedback via MyAberdeen.  We also put model answers/mark schemes for all coursework and the mock exams on MyAberdeen to give students the chance to self-assess their own performance.***  *• Students can receive feedback on their progress with the Course on request at the weekly tutorial/feedback sessions;*  *• Students are given feedback through formal marking and return of practical reports;*  *• Students requesting feedback on their exam performance should make an appointment within 2 weeks of the publication of the exam results.* |