Integrated Vehicle Health Management (IVHM) is an increasingly important concept in vehicle management, offering a total integrated health check for high-tech, high-value vehicles such as aircraft, ships, high-speed trains and high-performance cars, and providing information to support operational decisions. Additionally, it is expected that there will be significant opportunity for application of this technology in the energy sector with potential to bring environmental benefits.

This unique MSc develops professionals with the ability to take a holistic and systematic approach to IVHM, integrating the range of technologies to deliver significant business benefits and improve competitiveness.

Benefit for a unique opportunity
This course is the only one of its kind in the world. Students are trained to identify business opportunities where IVHM can realise significant benefits in business productivity, environmental impact, and vehicle performance. Students are trained through the concepts and practice of the end-to-end process from sensing data from assets, communicating the data for analysis, and formulating operational decisions from the resulting data base.

Focus on your career
The unique nature of this course, underpinned by the knowledge and expertise of the delivery partners means that career opportunities are wide ranging. There are currently very few experts with an understanding of the full range of IVHM opportunities and how these can be integrated to deliver business solutions. Individuals selected to participate in this programme will therefore be able to immediately deliver significant business benefits to their employer or sponsoring company. In addition, the greater depth and breadth of skills gained will enable graduates to progress to more senior roles in the future.

Benefit from our reputation and facilities
In partnership with major industry partners (including Boeing, BAE Systems, Rolls-Royce plc, Meggitt and Thales) and EEDA, Cranfield launched the IVHM Centre in 2008 to enable the incorporation of IVHM technology into UK and global businesses. Students will benefit from teaching by staff from the Centre as well as expert practitioners. Students also benefit from access to the Centre’s state-of-the-art laboratories.

Benefit from practical experience in work-based projects
Group and individual thesis project work is a significant portion of the course, allowing students to put into practice the concepts and skills gained during the taught element of the course while gaining transferable skills in teamwork and project management. Students work on real business challenges from project sponsors. The thesis is agreed with the sponsor to ensure that it is based on a relevant topic addressing a real business problem.
Course details
Duration: Part-time: 2 years.

Start date: April 2011.

Funding: The majority of students are sponsored by their employers. Applicants from the East of England may be eligible for EEDA support. School bursaries are available for employees of small business and self-funding students. For information on funding please visit: www.cranfield.ac.uk/sas/funding

Who should apply?
The course is suitable for:
• engineers who have been working in a related field for a number of years and now need an overview of the complete IVHM field to further their careers and aid their company’s adoption of this important technology
• managers responsible for introducing new technology or developing new businesses exploiting IVHM.

Course overview
The course gives delegates an overview of IVHM technology and its role in business.

The students complete an induction module, the first six modules and the group project in the first year of registration. In the second year, the students complete the final two modules and the thesis project.

Particular features of the course are:
• A system engineering approach explains the context in which individual technologies are applied to enable full exploitation of opportunities
• Summary of individual IVHM technologies, eg structural health monitoring, prognostics
• Appreciation of current approaches in IVHM as used by leading practitioners
• How IVHM requirements are driven by business models and processes
• Case studies of IVHM applications.

Structure
• Taught modules 40%
• Group project* 20%
• Individual project 40%

*Dissertation for students who cannot participate in group work.

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK honours degree or equivalent in a relevant engineering, computing, or science-based discipline. A minimum of five years’ post-qualification work experience in a relevant role is required. Other relevant qualifications together with industrial experience may be considered.

Modules
• IVHM Business Context
• Diagnostics and Prognostics
• Instrumentation and Signal Processing
• System Engineering and Integration
• IVHM Architecture and Design
• IVHM Data Management
• Elective modules (select two):
  • Management of Technology and Innovation
  • Product Lifecycle Management
  • Requirements Engineering and Concept Creation
  • Product Engineering and Costing
  • Supply Chain Management
  • Air Transport Engineering (Maintenance Operations)

Why Cranfield University
Cranfield University is a wholly postgraduate university with an international community and a truly global reputation. All courses are designed to meet the training needs of industry and have a strong input from experts in their sector. Our focus is on applied research and developing industry’s future engineers, managers, consultants, and entrepreneurs.

Contact
For further information, please contact
School of Applied Sciences
T: +44 (0) 1234 754086
E: appliedsciences@cranfield.ac.uk

www.cranfield.ac.uk/ivhm