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| DEREE COLLEGE SYLLABUS FOR: | |
| ITC 4949 CYBERSECURITY & NETWORKS CAPSTONE PROJECT (Fall 2020) | 3/0/3 UK LEVEL: 6 UK CREDITS: 15 |
| PREREQUISITES: | <p>ITC 1070 Information Technology Fundamentals ITC 2024 Computer Networks and Cybersecurity Fundamentals ITC 2088 Introduction to Programming ITC 2193 Operating System Concepts ITC 3006 Mathematics for Computing ITC 3121 Computer Networks, Modeling and Analysis ITC 3160 Fundamentals of RDBMS ITC 3431 Cryptography and Network Security ITC 4214 Internet Programming ITC 4648 Ethical Hacking & Penetration Testing ITC 4140 Methods in ICT Project Research and Management MA 2010 Statistics I <i>or</i> MA 2021 Applied Statistics for Business <i>or</i> MA 2025 Applied Statistics for Science</p> |
| COREQUISITES: | None. |
| CATALOG DESCRIPTION: | Design, simulation/emulation, evaluation and testing of a cybersecurity solution or component applicable in a network device or part of a wireline or wireless network. Use of research results, networking and cybersecurity standards and solutions in order to produce publishable outcomes. |
| RATIONALE: | The module is the capstone for the students of the Cybersecurity and Networks program. Students are required to develop and/or simulate/emulate and evaluate a cybersecurity element or solution to a given networking problem, based on the knowledge and the skills acquired during their studies. Students will gain the experience of working on a realistic project and combine academic with professional practices, including domain-specific research, gradual progression, revisiting and evaluation. |
| LEARNING OUTCOMES: | <p>As a result of taking this course, the student should be able to:</p> <ol style="list-style-type: none"> 1. Evaluate algorithms and standards in terms of their performance, operational and functional requirements for a given networking set of conditions. 2. Develop and/or simulate/emulate cybersecurity elements and solutions. 3. Develop structured documentation to support a solution. 4. Apply effective project management to plan their project and meet deadlines. |
| METHOD OF TEACHING AND LEARNING: | <p>In congruence with the teaching and learning strategy of the college, the following tools are used:</p> <ul style="list-style-type: none"> • Lectures and laboratory sessions. • Progress meetings to monitor individual performance and provide formative feedback on milestone project submissions. • Office hours held by the instructor to provide further assistance to |

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| | <p>students.</p> <ul style="list-style-type: none"> Use of the online content management system (Blackboard CMS) to further facilitate communication. | | | | |
| ASSESSMENT: | <p>Summative:</p> <table border="1"> <tr> <td>1st assessment: Portfolio of project progress (not eligible for 2nd marking)</td> <td>10%</td> </tr> <tr> <td>Final assessment: Individual work Research project, independent or part of an R&D program</td> <td>90%</td> </tr> </table> <p>The 1st assessment tests the LO 4. The final assessment tests the LOs 1-3.</p> | 1 st assessment: Portfolio of project progress (not eligible for 2 nd marking) | 10% | Final assessment: Individual work Research project, independent or part of an R&D program | 90% |
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| Final assessment: Individual work Research project, independent or part of an R&D program | 90% | | | | |
| INDICATIVE READING: | <p>REQUIRED READING:</p> <ul style="list-style-type: none"> A list of selected articles from journals of high impact factor in the field. David V. Thiel, <i>Research Methods for Engineers</i>, Cambridge University Press, 1st edition, 2014, ISBN-13: 978-1107610194 <p>RECOMMENDED READING:</p> <ul style="list-style-type: none"> Various, depending on the exact subject of the capstone. K. Kogon, S. Blakemore, J. Wood, <i>Project Management for The Unofficial Project Manager</i>, FranklinCovey, 1st edition, 2015, ISBN-13: 978-1941631102, P. Levin, <i>Excellent Dissertations</i>, Open University Press. McGraw-Hill Education, 2nd edition. | | | | |
| INDICATIVE MATERIAL: <i>(e.g. audiovisual, digital material, etc.)</i> | <p>REQUIRED MATERIAL: N/A</p> <p>RECOMMENDED MATERIAL: N/A</p> | | | | |
| COMMUNICATION REQUIREMENTS: | <p>Daily access to the course's site on the College's Blackboard CMS and the acg email.</p> <p>Effective communication using proper written and oral English.</p> <p>Use of word processing and presentations SW for documentation and presentation of deliverables and the final project.</p> | | | | |
| SOFTWARE REQUIREMENTS: | <p>MS-Office, MS-Visio</p> <p>The exact software requirements depend on the project. The following are in indicative but not restrictive:</p> <ul style="list-style-type: none"> WireShark Protocol Analyser VMWare Pro Kali Linux and their tools Mininet Network Simulator 2 For Mobile Networks TCPdump EDX[®] SignalPro[®] wireless simulator WiFi mesh simulator-pro Microsoft Windows 200x Professional, latest Microsoft IIS, latest release Microsoft Windows Server 200x, latest Linux server version Microsoft TechNet Library Apache HTTP Server, latest release | | | | |

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| | <ul style="list-style-type: none"> • Programming languages such as Python, C, Java, Matlab, R, etc. • MySQL Server, latest release • Matlab |
| WWW RESOURCES: | <p>The exact resources depend on the project. The following are generic, indicative but not restrictive:</p> <ul style="list-style-type: none"> • IEEE Access, https://ieeaccess.ieee.org/ • IEEE Spectrum, https://spectrum.ieee.org/ • ACM, https://www.acm.org/ • Hack The Box, https://www.hackthebox.eu/ • ETSI, https://www.etsi.org/ • NYST, https://www.nist.gov/ |
| INDICATIVE CONTENT: | N/A |