KING'S OWN INSTITUTE*

Success in Higher Education

ICT741 DIGITAL FORENSICS T326 BRIEF

All information in the Subject Outline is correct at the time of approval. KOI reserves the right to make changes to the Subject Outline if they become necessary. Any changes require the approval of the KOI Academic Board and will be formally advised to those students who may be affected by email and via Moodle.
Information contained within this Subject Outline applies to students enrolled in the trimester as indicated.

1. General Information

1.1 Administrative Details

Associated HE Award(s)	Duration	Level	Subject Coordinator
Master of Information Technology (MIT) Master of Information Systems (MIS)	1 trimester	Postgraduate	Dr MD Badiuzzaman md.bodi@koi.edu.au P: +61 (2) 9283 3583 L: 7-11, 11 York Street. Consultation: via Moodle or by appointment.

1.2 Core/Elective

This subject is
- an elective subject for the Master of Information Technology (MIT)
- an elective subject for the Master of Information Systems (MIS)

1.3 Subject Weighting

Indicated below is the weighting of this subject and the total course points.

Subject Credit Points	Total Course Credit Points
4	MIT (64 Credit Points); MIS (64 Credit Points)

1.4 Student Workload

Indicated below is the expected student workload per week for this subject

No. Timetabled Hours/Week*	No. Personal Study Hours/Week**	Total Workload Hours/Week***
3 hours/week plus supplementary online material	7 hours/week	10 hours/week

* Total time spent per week at lectures and tutorials
** Total time students are expected to spend per week in studying, completing assignments, etc.
*** Combination of timetable hours and personal study

1.5 **Mode of Delivery** Classes will be face-to-face or hybrid. Certain classes will be online (e.g., special arrangements).

1.6 Pre-requisites ICT722 Information Security

1.7 General Study and Resource Requirements

- Students are expected to attend classes with the weekly worksheets and subject support material provided in Moodle. Students should read this material before coming to class to improve their ability to participate in the weekly activities.
- Students will require access to the internet and their KOI email and should have basic skills in word processing software such as MS Word, spreadsheet software such as MS Excel and visual presentation software such as MS PowerPoint.
- Computers and WIFI facilities are extensively available for student use throughout KOI. Students are encouraged to make use of the campus Library for reference materials.

Software resource requirements specific to this subject: Office 365, MS Imagine, VMware, Forensic Tools on book CD, Autopsy.

1.8 Academic Advising

Academic advising is available to students throughout teaching periods including the exam weeks. As well as requesting help during scheduled class times, students have the following options:

- Consultation times: A list of consultation hours is provided on the homepage of Moodle where appointments can be booked.
- Subject coordinator: Subject coordinators are available for contact via email. The email address of the subject coordinator is provided at the top of this subject outline.
- Academic staff: Lecturers and Tutors provide their contact details in Moodle for the specific subject. In most cases, this will be via email. Some subjects may also provide a discussion forum where questions can be raised.
- Head of Program: The Head of Program is available to all students in the program if they need advice about their studies and KOI procedures.
- Vice President (Academic): The Vice President (Academic) will assist students to resolve complex issues (but may refer students to the relevant lecturers for detailed academic advice).

2. Academic Details

2.1 Overview of the Subject

Digital forensics refers to the science of the recovery and investigation of data from digital devices. It is most often used in dealing with computer crime, but can be used in other instances such as data recovery. This subject introduces students to the emerging and evolving field of digital forensics with hands-on labs and practical exercises. Students will learn about data acquisition and validation processes in relation to investigating networks, files, operating systems, email, mobile devices and web services. Professional issues such as ethical responsibilities and legislative requirements will be examined. Students will be introduced to presenting forensic reports and testimony as an expert witness.

2.2 Graduate Attributes for Postgraduate Courses

Graduates of postgraduate courses from King's Own Institute will achieve the graduate attributes expected from successful completion of a postgraduate degree under the Australian Qualifications Framework (2nd edition, January 2013). Graduates at this level will be able to apply advanced body of knowledge from their major area of study in a range of contexts for professional practice or scholarship and as a pathway for further learning.

King's Own Institute's generic graduate attributes for a master's level degree are summarised below:

	KOI Postgraduate Degree Graduate Attributes	Detailed Description
	Knowledge	Current, comprehensive and coherent knowledge, including recent developments and applied research methods

	Critical Thinking	Critical thinking skills to identify and analyse current theories and developments and emerging trends in professional practice
	Communication	Communication and technical skills to analyse and theorise, contribute to professional practice or scholarship, and present ideas to a variety of audiences
	Research and Information Literacy	Cognitive and technical skills to access and evaluate information resources, justify research approaches and interpret theoretical propositions
	Creative Problem Solving Skills	Cognitive, technical and creative skills to investigate, analyse and synthesise complex information, concepts and theories, solve complex problems and apply established theories to situations in professional practice
	Ethical and Cultural Sensitivity	Appreciation and accountability for ethical principles, cultural sensitivity and social responsibility, both personally and professionally
	Leadership and Strategy	Initiative, leadership skills and ability to work professionally and collaboratively to achieve team objectives across a range of team roles Expertise in strategic thinking, developing and implementing business plans and decision making under uncertainty
	Professional Skills	High level personal autonomy, judgement, decision-making and accountability required to begin professional practice

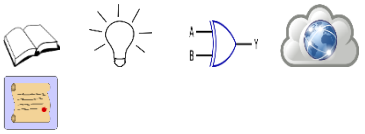
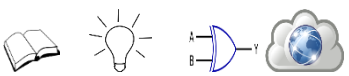
Across the courses, these skills are developed progressively at three levels:

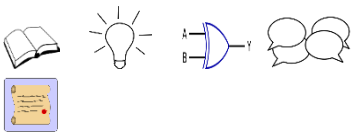
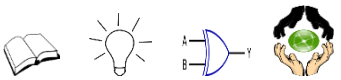
- **Level 1 Foundation –** Students learn the skills, theories and techniques of the subject and apply them in stand-alone contexts
- **Level 2 Intermediate –** Students further develop skills, theories and techniques of the subject and apply them in more complex contexts, beginning to integrate the application with other subjects
- **Level 3 Advanced** – Students have a demonstrated ability to plan, research and apply the skills, theories and techniques of the subject in complex situations, integrating the subject content with a range of other subject disciplines within the context of the course

Generally, skills gained from subjects in the Graduate Certificate and Graduate Diploma are at levels 1 and 2 while other subjects in the Master's degree are at level 3.

2.3 Subject Learning Outcomes

Listed below, are key knowledge and skills students are expected to attain by successfully completing this subject:

Subject Learning Outcomes	Contribution to Graduate Attributes
a) Apply procedures, theories and techniques of digital forensics	
b) Demonstrate forensic examination skills on a variety of devices, operating systems, and technologies	
c) Compare the effectiveness of digital forensic tools based on the requirements of the digital crime	

d) Assemble forensic reports based on digital evidence according to the digital security practices in industry	
e) Evaluate ethical and legal considerations involved in the profession of computer forensics	

2.4 Subject Content and Structure

Below are details of the subject content and how it is structured, including specific topics covered in lectures and tutorials. Reading refers to the text unless otherwise indicated.

Weekly Planner:

Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 1 26 October	Introduction to digital forensic investigation and lab requirements	Chs. 1, 2	Discuss review questions on digital forensic investigation procedures and conduct. Formative not graded
Week 2 02 November	Data acquisition	Ch. 3	Discuss review questions on storage format and data acquisition methods. Tutorial submission graded
Week 3 09 November	Processing crime and incident scenes, and computer forensic tools	Chs. 4, 6	Discuss review questions on storing and securing evidence, search preparation, and forensic hardware and software tools. Tutorial submission graded
Week 4 16 November	Working with windows and command line interface systems	Ch. 5	Discuss review questions on file systems, file structure, Windows registry, and virtual machines. Tutorial submission graded
Week 5 23 November	Linux and Macintosh file systems and recovering graphic files	Chs. 7, 8	Discuss review questions on file structures, Linux forensic tools, graphic file forensics, data compression, and file formats Tutorial submission graded **Assessment 2: due**
Week 6 30 November	Digital forensic analysis and validation	Ch. 9	Discuss review questions on data collection, analysis, validation, and data hiding techniques Tutorial submission graded
Week 7 07 December	Virtual machine forensics, live acquisitions, and network forensics	Ch. 10	Discuss review questions on forensic procedures for Type 2 and Type 2 Hypervisor, live acquisition, and procedures for network forensics. Tutorial submission graded

Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 8 14 December	E-mail and social media investigation	Ch. 11	Discuss review questions on Email crimes and violations, Email and social media communication forensic tools. deepfake and synthetic-media authentication (image/video/audio) and an introduction to AI-assisted triage and LLM-based timeline analysis Tutorial submission graded **Assessment 3: Report due**
Week 9 04 January	Mobile device forensics and the Internet of Things	Chs. 12, 13	Discuss review questions on mobile device forensics and IOT Tutorial submission graded **Assessment 3: Presentation due**
Week 10 11 January	Report writing for high-tech investigation	Ch. 14	Discuss review questions on the importance and types of reports, report writing guidelines, and use of tools for writing reports Tutorial submission graded
Week 11 18 January	Expert testimony and ethics for the expert witness	Ch. 15, 16	Discuss review questions on preparation and guidelines for expert testimony, and ethics and code for expert witness Tutorial submission graded **Assessment 4: Report due**
Week 12 25 January	Revision		Discuss review questions from week 1 to 11 Formative not graded **Assessment 4: Presentation due**
Week 13 01 February	Study review week and Final Exam Week		
Week 14 08 February	- Final Exam Week - Continuing students - enrolments for T127 open		Please see the exam timetable for the exam date, time and location
Week 15 15 February	- Student Vacation begins - New students - enrolments for T127 open		
Week 16 22 February	• Results Released • Review of Grade Day for T326 – see Sections 2.6 and 3.2 below for relevant information. • Certification of Grades NOTE: More information about the dates will be provided at a later date through Moodle/KOI email.		
T127 01 March 2027			
Week 1 01 March	Week 1 of classes for T127		

2.5 Teaching Methods/Strategies

Briefly described below are the teaching methods/strategies used in this subject:

- *Lectures* (1 hours/week) are conducted in seminar style and address the subject content, provide motivation and context and draw on the students' experience and preparatory reading.
- *Tutorials* (2 hours/week) include class discussion of case studies and research papers, practice sets and problem-solving and syndicate work on group projects. Tutorials often include group exercises and so contribute to the development of teamwork skills and cultural understanding. Tutorial participation is an essential component of the subject and contributes to the development of many of the graduate attributes (see section 2.2 above). Tutorial participation contributes towards the assessment in many subjects (see details in Section 3.1 for this subject). Supplementary tutorial material such as case studies, recommended readings, review questions etc. will be made available each week in Moodle.
- *Online* teaching resources include class materials, readings, model answers to assignments and exercises and discussion boards. All online materials for this subject as provided by KOI will be found in the Moodle page for this subject. Students should access Moodle regularly as material may be updated at any time during the trimester
- *Other contact* - academic staff may also contact students either via Moodle messaging, or via email to the email address provided to KOI on enrolment.

2.6 Student Assessment

Assessment is designed to encourage effective student learning and enable students to develop and demonstrate the skills and knowledge identified in the subject learning outcomes. Assessment tasks during the first half of the study period are usually intended to maximise the developmental function of assessment (formative assessment). These assessment tasks include weekly tutorial exercises (as indicated in the weekly planner) and low stakes graded assessments (as shown in the graded assessment table). The major assessment tasks where students demonstrate their knowledge and skills (summative assessment) generally occur later in the study period. These are the major graded assessment items shown in the graded assessment table.

Final grades are awarded by the Board of Examiners in accordance with KOI's Assessment and Assessment Appeals Policy. The definitions and guidelines for the awarding of final grades are:

- *HD High distinction* (85-100%): an outstanding level of achievement in relation to the assessment process.
- *D Distinction* (75-84%): a high level of achievement in relation to the assessment process.
- *C Credit* (65-74%): a better than satisfactory level of achievement in relation to the assessment process.
- *P Pass* (50-64%): a satisfactory level of achievement in relation to the assessment process.
- *F Fail* (0-49%): an unsatisfactory level of achievement in relation to the assessment process.
- *FW:* This grade will be assigned when a student did not submit any of the compulsory assessment items.

Provided below is a schedule of formal assessment tasks and major examinations for the subject.

Assessment Type	When Assessed	Weighting	Learning Outcomes Assessed
Assessment 1: Weekly Tutorials	Week 2 – Week 11	20%	a, b, c, d and e
Assessment 2: Research Project – Individual (1500 words)	Week 5	15%	c and e
Assessment 3:	Report: Week 8	25%	a and b

Assessment Type	When Assessed	Weighting	Learning Outcomes Assessed
Digital Forensic Principles - Individual (2000 words)	In-class Individual Demonstration : weeks 9		
Assessment 4: Group report on professional computer forensic plan and in-class demonstration and presentation (2500 words report)	Report: Weeks 11 In-class Demonstration and Presentation: Week 12	Group – 20% Demonstration – 10% Presentation – 10% Total - 40%	a, b, c, d, and e

Requirements to Pass the Subject:

To gain a pass or better in this subject, students must gain a *minimum of 50%* of the total available subject marks.

2.7 Prescribed and Recommended Readings

Provided below, in formal reference format, is a list of the prescribed and recommended readings.

Prescribed Text:

Nelson, B., Phillips, A. and Steuart, C. (2024) Guide to Computer Forensics and Investigations. 7th edn. Mason, OH: Cengage Learning US. Available at: ProQuest Ebook Central. ISBN: 9780357673010.

Recommended Readings:

Holt, T.J., Bossler, A.M. and Seigfried-Spellar, K.C. (2022) Cybercrime and digital forensics: An introduction. Abingdon: Routledge. ISBN: 9780367360078.

Gogolin, G. (2021) Digital forensics explained. Boca Raton, FL: CRC Press. ISBN: 9781003049357.

Johansen, G. (2020) Digital forensics and incident response. 2nd edn. Birmingham: Packt Publishing. ISBN: 9781838649005.

Kävrestad, J. (2020) Fundamentals of digital forensics. Cham: Springer International Publishing. ISBN: 9783030389543.

Sachowski, J. (2018) Digital forensics and investigation: People, process, and technology to defend the enterprise. 1st edn. Boca Raton, FL: CRC Press. ISBN: 9781315194820.

Suggested Conference/ Journal Articles:

Bendiab, G., Haiouni, H., Moulas, I. and Shiaeles, S. (2025) 'Deepfakes in digital media forensics: Generation, AI-based detection and challenges', Journal of Information Security and Applications, 88, p. 103935. DOI: https://doi.org/10.1016/j.jisa.2024.103935

Brunty, J. (2023) 'Validation of forensic tools and methods: A primer for the digital forensics examiner', Wiley Interdisciplinary Reviews: Forensic Science, 5(2), p.e1474. https://doi.org/10.1002/wfs2.1474.

Casino, F., Dasaklis, T.K., Spathoulas, G.P., Anagnostopoulos, M., Ghosal, A., Borocz, I., Solanas, A., Conti, M. and Patsakis, C. (2022) 'Research trends, challenges, and emerging topics in digital forensics: A review of reviews', IEEE Access, 10, pp.25464-25493. **DOI:** 10.1109/ACCESS.2022.3154059.

Cook, M., Marnerides, A., Johnson, C. and Pezaros, D. (2023) 'A survey on industrial control system digital forensics: challenges, advances and future directions', IEEE Communications Surveys & Tutorials. DOI: https://doi.org/10.1109/COMST.2023.3264680.

Dunsin, D., Ghanem, M.C., Ouazzane, K. and Vassilev, V. (2024) 'A comprehensive analysis of the role of artificial intelligence and machine learning in modern digital forensics and incident response', Forensic Science International: Digital Investigation, 48, p. 301675. DOI: https://doi.org/10.1016/j.fsidi.2023.301675

Horsman, G. (2024) 'Sources of error in digital forensics', Forensic Science International: Digital Investigation, 48, p.301693. DOI: https://doi.org/10.1016/j.fsidi.2024.301693.

Kebande, V.R. and Awad, A.I. (2024) 'Industrial Internet of Things Ecosystems Security and Digital Forensics: Achievements, Open Challenges, and Future Directions', ACM Computing Surveys, 56(5), pp.1-37. DOI: https://doi.org/10.1145/3635030.

Sibe, R.T. and Kaunert, C. (2024) 'Digital Evidence, Digital Forensics, and Digital Forensic Readiness', in Cybercrime, Digital Forensic Readiness, and Financial Crime Investigation in Nigeria. Cham: Springer Nature Switzerland, pp.57-83. DOI: https://doi.org/10.1007/978-3-031-54089-9_3.

Wickramasekara, A., Breitinger, F. and Scanlon, M. (2025) 'Exploring the potential of large language models for improving digital forensic investigation efficiency', Forensic Science International: Digital Investigation, 52, p. 301859. DOI: https://doi.org/10.1016/j.fsidi.2024.301859

Xiao, N., Wang, Z., Sun, X. and Miao, J. (2024) 'A novel blockchain-based digital forensics framework for preserving evidence and enabling investigation in industrial Internet of Things', Alexandria Engineering Journal, 86, pp.631-643. DOI: https://doi.org/10.1016/j.aej.2023.12.021.

Yaacoub, J.P.A., Noura, H.N., Salman, O. and Chehab, A. (2022) 'Advanced digital forensics and anti-digital forensics for IoT systems: Techniques, limitations and recommendations', Internet of Things, 19, p.100544. DOI: https://doi.org/10.1016/j.iot.2022.100544.

Useful Websites:

The following industry websites are useful introductory sources covering a range of information useful for this subject.

2 https://www.justice.gov/criminal/criminal-ccips
3 https://www.htcia.org/
4 https://nij.ojp.gov/topics/forensics
5 https://www.isfce.com/

Suggested Periodicals:

f) The Journal of Digital Forensics, Security and Law: https://www.jdfsl.org/
g) Digital Investigation: https://www.journals.elsevier.com/digital-investigation
h) Journal of Digital Forensic Practice: https://www.tandfonline.com/loi/udfp20

Software Installation Links:

6 How to install Autopsy on MAC: https://app.box.com/s/s0m91m707kuujbo8asvnaorv9e8mqm88
7 Remote Acquisition with F-Response: https://www.f-response.com/software/collect

Conference/ Journal Articles:

Students are encouraged to read peer reviewed journal articles and conference papers. Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites.