



MASTERS DEGREE ASSIGNMENT SPECIFICATION

Student name:		Student P number:	
Programme:	MSc in NDT&E		
Module:	Radiographic Methods	Module Level:	7
Module code:	M7X00729	Contribution to Overall Module Assessment (%):	40%
Lecturer:	Prof Peter Charlton	Internal Verifier:	Dr Owen Williams
Assignment Title:	MicroFocus CT Radiography Analysis	Assignment No (x of x):	1 of 1
Hand Out Date:	21/02/18	Submission deadline:	20/03/18

Referencing:	In the main body of your submission you must give credit to authors on whose research your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have read or quoted in order to complete this assignment (e.g. for books: surname of author and initials, year of publication, <u>title of book</u> , edition, publisher: place of publication).				
Disclosure:	I declare that this assignment is all my own work and that I have acknowledged all materials used from the published or unpublished works of other people. All references have been duly cited.				
Student's Signature:	Assignments will not be accepted without a signature here		Date:		
Turnitin: Lecturer to tick to indicate if an electronic version of the assignment must be submitted to Turnitin. Note: the Turnitin version is the primary submission and acts as a receipt for the student. Both electronic and paper versions MUST be submitted by the same deadline. No marks will be released until both submissions are received. Late submission of either the electronic or paper version will result in a late penalty mark. Penalties for late submission: Up to one week late, maximum mark of 40%. Over one week late, Refer. Only Year Tutors and the Programme Director may grant an extension.				YES	✓
				NO	

Learning Outcomes tested (from module syllabus)	Assessment Criteria To achieve each outcome a student must demonstrate the ability to:
- Evaluate the applicability of particular radiographic techniques to specific defect-identification and evaluation problems. - Analyse results obtained from the application of specific radiological techniques and correlate those results with the physical characteristics of the test specimen.	- Critically appraise the suitability of specific techniques. - Select and apply appropriate techniques for test data analysis. Identify flaws etc. through interpretation of results obtained.

- Please submit the assignment parts in a suitable report folder– not in polypockets.
- This form (ALL PAGES) MUST be at the front of the paper submission. Assignments will not be accepted without this form as it is a requirement that you sign the disclosure regarding referencing convention.
- DO NOT put this form into Turnitin or it will match many similarities with other students' submissions.

TASK DESCRIPTION

The assignment consists of 3 parts:

1. Describe the main system components and operation of current Microfocus Computer Tomography systems.
2. Carry out 2D radiographic inspections on 2 components. These will include an aluminium welded sample and a thin steel plate. You will have the data in the form of bitmaps and using suitable software determine if defects are present and if so try to estimate their sizes.
3. Acquire 3D volumetric image data of a relevant low density component. Further, using the volumetric graphics analysis software conduct relevant dimensional measurements of key features of the component.

GUIDANCE FOR STUDENTS IN THE COMPLETION OF TASKS

Ensure you provide a description of the acquisition processes and key parameter values used during the acquisition process.

Include a cover page with your Student Name, p number, course and module titles, lecturer name and Assignment title and date.

The report should aim to be no more than 2500 words (not including diagrams)

Use the Harvard referencing system, double spacing and font size 12.

A typical experimental report structure would usually include, where relevant, the following sections:

Title Page - As detailed above
Abstract - This should be three or four sentences, summarising what you did, how you did it, what the results (and uncertainties) were and what your conclusions were. In practice, you will write this last , so leave about half a page at the beginning of your write-up in which to put an abstract later.
Contents
Apparatus - List the apparatus with a diagram where necessary. Describe in particular anything different or additional to that in the script.
Introduction/Method/Procedure - Explain very briefly what the experiment is about. Record what you did - particularly if it differs from the script. Include problems and disasters.
Measurements and Graphs of Raw measurements - Record all raw measurements (good, bad or indifferent) as and when you obtained them. If the raw data or calculations are voluminous, they could be summarised here and included in their entirety in an appendix. It is often worthwhile to plot a graph of your measurements as you go. This can save time since it indicates quickly if you need to repeat readings or if you need more.
Calculations and error estimates - Describe the calculations or other processing of your results. Explain what equations you used and include a sample calculation, even if you use a spreadsheet programme to carry out the calculations. Discuss the sources of error in your measurements and use these to estimate the uncertainties (or experimental error) on your final results. Include any graphs used in your analysis.
Results and Discussion - Discuss the interpretation of your results. The questions in the experimental script usually lead you through what is required, so you should record your responses to these questions as you come to them. Clearly state your results with estimated errors and units. This is where you should compare your results with accepted values from reference books or other sources.
Conclusion and bibliography - Write a conclusion drawing the results together, discussing their physical implications, the validity of the theory and the methods, and scope for improvement of the experiment. Remember to list the books, articles or web pages that you used for reference in a bibliography at the end.
Appendix - Most reports will not require appendix as tables of data, calculations and graphs of results should normally be included in the main body of the report to create a coherent whole. Only relegate large volumes of data to the appendix if absolutely necessary.
Don't forget to go back and write the abstract.

MARKING CRITERIA AND STUDENT FEEDBACK

This section details the assessment criteria. The *extent* to which these are demonstrated by you determines your mark. The marks available for each criterion are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Common Assessment Criteria Applied	Marks available	Marks awarded
1. Research-informed Literature Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions.		
	10	
2. Knowledge and Understanding of Subject Extent of knowledge and understanding of concepts and underlying principles associated with the discipline.		
	20	
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence		
	30	
4. Practical Application and Deployment Deployment of methods, materials, tools and techniques; application of concepts; formulation of innovative and creative solutions to solve problems.		
	30	
5. Skills for Professional Practice Attributes in professional practice: individual and collaborative working; deployment of appropriate media; presentation and organisation.		
	10	

Assignment Mark (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)	Late Submission Penalties (tick if appropriate)		%
	Up to one-week late		
	Over one week late		

COMMON ASSESSMENT AND MARKING CRITERIA

	OUTRIGHT FAIL	UNSATISFACTORY	SATISFACTORY	GOOD	VERY GOOD	EXCELLENT	EXCEPTIONAL
Assessment Criteria	0-34%	35-49%*	50-54%	55-59%	60-69%	70-79%	80-100%
1. Research-informed Literature Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions	Little or no evidence of reading. Views and findings unsupported and non-authoritative. Referencing conventions largely ignored.	Poor evidence of reading and/or of reliance on inappropriate sources, and/or indiscriminate use of sources. Referencing conventions used inconsistently.	References to a limited range of mostly relevant sources. Some omissions and minor errors. Referencing conventions evident though not always applied consistently.	Inclusion of a range of research-informed literature, including sources retrieved independently. Referencing conventions mostly consistently applied.	Inclusion of a wide range of research-informed literature, including sources retrieved independently. Selection of relevant and credible sources. Very good use of referencing conventions, consistently applied.	A comprehensive range of research informed literature embedded in the work. Excellent selection of relevant and credible sources. High-level referencing skills, consistently applied.	Outstanding knowledge of research-informed literature embedded in the work. Outstanding selection of relevant and credible sources. High-level referencing skills consistently and professionally applied
2. Knowledge and Understanding of Subject Extent of systematic knowledge, understanding and critical awareness of concepts and underlying principles associated with the discipline.	Major gaps in knowledge and understanding of material at this level. Substantial inaccuracies.	Gaps in knowledge, with only superficial understanding. Some significant inaccuracies.	Evidence of knowledge and understanding of current and relevant concepts and underlying principles but with some gaps or errors.	Knowledge is accurate with a good understanding of the field of study.	Knowledge is extensive. Exhibits understanding of the breadth and depth of established and contemporary views.	Excellent mastery of a complex and specialised area of knowledge and skills, with an excellent critical awareness of current problems and/or new insights at the forefront of the field. Clear awareness of challenges to established views and the limitations of the knowledge base.	Exceptional mastery of a complex and specialised area of knowledge and skills, with an exceptional critical awareness of current problems and/or new insights at the forefront of the field. A critical awareness of the ambiguities and limitations of knowledge.
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence	Unsubstantiated generalisations, made without use of any credible evidence. Lack of logic, leading to unsupportable/missing conclusions. Lack of any attempt to analyse, synthesise or evaluate.	Some evidence of analytical intellectual skills, but for the most part descriptive. Ideas/findings sometimes illogical and contradictory. Generalised statements made with scant evidence. Conclusions lack relevance.	Evidence of some logical, critical thinking and some attempts to synthesise, albeit with some weaknesses. Some evidence to support findings/views, but evidence not consistently interpreted. Some relevant conclusions and recommendations, where relevant.	Evidence of logical, analytical, critical thinking and synthesis. Can analyse new and/or complex data and situations without guidance. An emerging awareness of different stances and ability to use evidence to support the argument. Valid conclusions and recommendations, where relevant	Evaluates methodologies, current research and ideas critically and, where appropriate, proposes new hypotheses/ideas. Evaluates and synthesises complex issues both systematically and creatively. Makes sound judgements and proposes convincing arguments in the absence of complete data. Sound, convincing conclusions / recommendations.	Excellent critical evaluation of methodologies, current research and ideas and, where appropriate, proposes new hypotheses/ ideas. Evaluates and synthesises complex issues systematically and creatively. Makes excellent judgements and proposes convincing arguments in the absence of complete data. Strong, persuasive, conclusions, justifiable recommendations. Work is of conference publishable quality.	Exceptional critical evaluation of methodologies, current research and ideas and, where appropriate, proposes new hypotheses/ ideas. Evaluates and synthesises complex issues at a high level of mastery. Makes outstanding judgements and proposes highly convincing arguments in the absence of complete data. Highly persuasive conclusions. Work is of journal publishable quality.
4. Practical Application and Deployment Effective deployment of appropriate methods, materials, tools and techniques; extent of skill demonstrated in the application of concepts to a variety of processes and/or contexts; formulation of innovative, original and creative solutions to solve problems.	Limited or no use of methods, materials, tools and/or techniques. Little or no appreciation of the context of the application.	Rudimentary application of methods, materials, tools and/or techniques but without consideration and competence. Flawed appreciation of the context of the application.	A satisfactory awareness and mostly appropriate application of well established methods, materials, tools and/or techniques. Some appreciation of the context of the application.	A good and appropriate application of standard methods, materials, tools and/or techniques. Good appreciation of the context of the application, with some use of examples, where relevant.	A very good application of a range of methods, materials, tools and/or techniques. Very good consideration of the context of the application, with perceptive use of examples, where relevant. Evidence of some originality, innovation and creativity.	An advanced application of a range of methods, materials, tools and/or techniques. The context of the application is well considered, with extensive use of relevant examples. Application and deployment extend beyond established conventions. Originality, innovation and/or creativity evident throughout.	Outstanding levels of application and deployment skills. Assimilation and development of cutting edge processes and techniques.
5. Skills for Professional Practice Demonstrates attributes expected in professional practice including: individual initiative and collaborative working; deployment of appropriate media to communicate (including written and oral); clarity and effectiveness in presentation and organisation.	Communication media is inappropriate or misapplied. Little or no evidence of autonomy in the completion of tasks. Work is poorly structured and/or largely incoherent.	Media is poorly designed and/or not suitable for the audience. Poor independent or collaborative initiative. Work lacks structure, organisation, and/or coherence	Can communicate clearly to specialist and non-specialist audiences in a suitable format but with some room for improvement. Can work autonomously and as part of a team, but with limited involvement in group activities. Work lacks coherence in places and could be better structured.	Can communicate effectively in a suitable format, but may have minor errors. Can work effectively autonomously and as part of a team, with clear contribution to group activities. Mostly coherent work and is in a suitable structure.	Can communicate well, confidently and consistently in a suitable format. Can work very well autonomously and as part of a team, with very good contribution to group activities. Work is coherent and fluent and is well structured and organised.	Can communicate professionally and, confidently in a suitable format. Can work professionally autonomously and within a team, showing leadership skills as appropriate, managing conflict and meeting obligations. Work is coherent, very fluent and is presented professionally.	Can communicate with an exceptionally high level of professionalism. Can work exceptionally well and professionally autonomously and within a team, showing advanced leadership skills. Work is exceptionally coherent, very fluent and is presented professionally.

Student Self Evaluation Form

Student name:		Student P number:	
Programme:		Year of programme	
Assignment Title:			

This section repeats in brief the common assessment criteria detailed on previous pages. The *extent* to which these are demonstrated by you determines your mark. Using these criteria, tick the box that best indicates the level of achievement you feel you have achieved with regard to each of them.

Common Assessment Criteria Applied	Level of Achievement						
	REFER		PASS			DISTINCTION	
	OUTRIGHT FAIL	UNSATISFACTORY	SATISFACTORY	GOOD	VERY GOOD	EXCELLENT	EXCEPTIONAL
1. Research-informed Literature	0-34%	35-49%	50-54%	55-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐
2. Knowledge and Understanding of Subject	0-34%	35-49%	50-54%	55-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐
3. Analysis	0-34%	35-49%	50-54%	55-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐
4. Practical Application and Deployment	0-34%	35-49%	50-54%	55-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐
5. Skills for Professional Practice	0-34%	35-49%	50-54%	55-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☐

PLEASE COMMENT ON AREAS IN WHICH YOU FEEL THAT YOU HAVE PERFORMED WELL	PLEASE COMMENT ON AREAS YOU FEEL THAT YOU NEED TO DEVELOP

Student's Name		Date	
Student's Signature			