



INTERNAL ASSESSMENT APPROVAL FORM (INCLUDING COLLABORATIVE PROVISION)

This form is used to ensure that assessment specifications have been through an internal review process prior to external examination/approval and release to students. It should be completed for each assessment for a particular module. The assessment tasks, criteria and marking scheme should accompany this form.

PARTNER (and taught location if relevant):	Coleg Sir Gar				
EXTERNAL EXAMINER NAME:	Dr Alison Griffiths				
ASSESSMENT AUTHOR :	Robert Jenkins				
MODULE TITLE:	Production and Test				
MODULE CODE:	SGEE6002		MODULE LEVEL:	6	
COMPONENT NO. (e.g. 1 of 2):	2 of 2		COMPONENT WEIGHTING (e.g. 50% of the module):	50%	
ASSESSMENT PERIOD	☐ Semester 1	☐ Semester 1 Re-sit	☒ Semester 2	☐ Semester 2 Re-sit	Other, please state
TYPE OF ASSESSMENT:	☒ Coursework		☐ Examination		☐ Practical
LANGUAGE OF ASSESSMENT:	English		TRANSLATION REQUIRED (Y/N):	N	
FOR EXAMINATIONS ONLY. SPECIFY BELOW ANY ADDITIONAL MATERIAL(S) TO BE USED IN THE EXAMINATION					
<i>This box will expand as you type</i>					

INTERNAL MODERATOR PLEASE TICK TO INDICATE THAT THE ASSESSMENT INCLUDES:		Please ☒		Comments
		YES	NO	
1	Tasks that are specified clearly, accurately and comprehensibly, with appropriate use of language and neat presentation	☒	☐	
2	Tasks which enable the module learning outcomes to be demonstrated (as per the module syllabus)	☒	☐	
3	Tasks which conform to the assessment described in the module syllabus	☒	☐	
4	Tasks which are written at the appropriate level of the Framework for Higher Education Qualifications (see http://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf?sfvrsn=170af781_14).	☒	☐	
5	Clear criteria for assessment and guidance about how marking/grading will be applied	☒	☐	
6	Guidance about expected evidence for submission, e.g. essay or report, word count, bibliography and references	☒	☐	
7	Reference to good academic conduct, for example referencing, plagiarism and Turnitin	☒	☐	
8	Actions to complete Replace marking criteria with current Level 6 <i>This box will expand as you type</i>			

SIGNATURE OF APPROVAL:	SIGNATURE	DATE
INTERNAL MODERATOR: I confirm that this version of the assessment specification is ready to be sent to the Partnership Team Leader		26/02/21

ONLY TO BE COMPLETED IF THE ASSESSMENT IS LINKED TO A COLLABORATIVE PARTNER

PARTNERSHIP TEAM LEADER PLEASE TICK TO INDICATE THAT THE ASSESSMENT INCLUDES:		Please ☒ YES ☐ NO		Comments
1	Tasks that are specified clearly, accurately and comprehensibly, with appropriate use of language and neat presentation			
2	Tasks which enable the module learning outcomes to be demonstrated (as per the module syllabus)			
3	Tasks which conform to the assessment described in the module syllabus			
4	Tasks which are written at the appropriate level of the Framework for Higher Education Qualifications (see http://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf?sfvrsn=170af781_14).			
5	Clear criteria for assessment and guidance about how marking/grading will be applied			
6	Guidance about expected evidence for submission, e.g. essay or report, word count, bibliography and references			
7	Reference to good academic conduct, for example referencing, plagiarism and Turnitin			
8	Actions to complete <i>This box will expand as you type</i>			

SIGNATURE OF APPROVAL:	SIGNATURE	DATE
PTL: I confirm that this version of the assessment specification is ready to be sent to the External Examiner		

UWTSD PROVISION: please submit the completed document to the appropriate Programme Director.

COLLABORATIVE PROVISION: please submit the completed document (or make available electronically) to the Partnership Team Leader. This must be in accord with specific arrangements for sharing electronic documents (e.g. via SharePoint or similar).

The assessment tasks, criteria and marking scheme should accompany this form

APPENDIX GA36c

LEVEL 6 ASSESSMENT SPECIFICATION

Student name:		Student ID number:	
Programme:	BSc (Hons) Electrical and Electronic Engineering		
Module:	Electronic Production & Test		
Module code:	SGEE6002	Contribution to Overall Module Assessment (%):	50%
Lecturer:	Robert Jenkins	Internal Verifier:	M.Hall
Assignment Title:	Pseudo Random Pattern Generators	Word count (or equivalent):	3000
Submission deadline:		Return date of provisional marks & written feedback:	
Submission method:	All written assessments, where practical and possible, must be submitted via Turnitin unless otherwise instructed by the Lecturer. (Please DO NOT put this assessment specification into Turnitin or it will match many similarities with other students' submissions.) Alternative submission method (if applicable): Late submission of the assessment will result in a late penalty mark. Penalties for late submission: Up to one week late, maximum mark of 40%. Over one week late, 0%. Only the Extenuating Circumstances Panel may approve a change to submission dates.		
Academic honesty / referencing:	Academic honesty is required. In the main body of your submission you must give credit to authors on whose research and ideas your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have used, cited or quoted in order to complete this assessment.		

Module Learning Outcomes (from module syllabus)

- Critically evaluate a range of processes, techniques and strategies required to successfully develop a prototype design into a fully manufactured and tested sustainable product.
- Apply expert knowledge to design a prototype product to meet user or customer needs with consideration for the wider engineering context, public perception and aesthetics, and relevant legal requirements governing engineering activities.

TASK DESCRIPTION

Aims and Objectives

The aim is to demonstrate a systematic understanding of electronic production test techniques, with the awareness of commercial and manufacturing factors required to successfully test a manufactured prototype design.

Assignment Tasks

Task 1 - Research

Investigate the use of Automatic Machine Vision Inspection with regard to Pattern Matching and Colour recognition for PCB production and test. Give an example of the issues to consider and how the process can be improved in an industrial automation environment.

Task 2 – Design ATE

Design and simulate a 6 bit Hybrid CAR (90 / 150) using a CAD system and analyse results to ensure maximum length is achieved.

Implement the design practically using a hardware descriptive language and produce an analysis of the results under test.

Task 3 – Test and Analysis

Implement the CAD and VHDL designs in Task 2 to automatically test a PCB circuit.

Carry out an analysis of the practical results of the ATE systems by applying identical input fault conditions to the CUT.

Task 4 – Conclusion and Recommendations

Critically evaluate the test results for all methods of testing. How did the test results compare with theory? What considerations should be taken into account for a production environment when designing ATE?

Comment on the overall performance of the test methods and summarise the considerations necessary for business and customer needs such as cost drivers.

GUIDANCE FOR STUDENTS IN THE COMPLETION OF TASKS

Requirements

You are required to present a printed formal laboratory report containing detailed observational notes of your work. This report must be 3000 words and should be laid out in the following sections preceded by a title page and a table of contents:-

1. Introduction (Set out the aims and objectives of the assignment)
2. Research
3. Design of assignment requirements and constraints
4. Analysis of NI MultiSim results
5. Analysis of results using hardware descriptive language FPGA technology
6. Testing of prototype PCB circuit using CAD methods
7. Testing of prototype PCB circuit using FPGA technology
8. Conclusions and recommendations
9. Appendices including reference section

You are expected to present a detailed critical analysis of all your observations and designs. The design and analysis should be evident in both the practical work and written work.

Your title page for the report must be in the following format:

Course:	BSc Electrical and Electronic Engineering
Module:	SGEE6002 – Electronic Production and Test
Assignment Title:	Pseudo Random Pattern Generators
Name:	???
University number:	???
Date Submitted:	DD/MM/YYYY
Word Count:	???? words

Further guidance:

- Do not use a styled document (template) and don't add your company logo
- Do not include photographs of course notes or formative classroom work
- All pages and figures must be numbered and listed in the ToC and ToF
- There is no need to include whole datasheets; simply cite their source or include a “snip” of the relevant information
- Write all sections in the third person
- Note which sections of your report have been identified above as places where the marks will be awarded and use your word allocation wisely
- Save your report as a .pdf with your university number as the file name and upload the pdf version only to TurnIt-In
- The TurnIt-In rubric will be used to record your marks and provide you with tutor feedback

Going Over the Word Limit

If you are found to have exceeded the specified word limit for an assessment, your work may be subject to a penalty:

- Under length - No penalty, but your work is probably missing key information
- Up to 10% over length - No deduction off final mark
- 11% or more over length - Deduction of 5 marks off final mark (but cannot reduce mark below 40%)

To measure the word count, DO NOT use Turnit-In and do not include the following:

- Assignment brief
- Index, Table of Contents and Table of Figures
- Executive Summary
- Formula and calculations (use MS Equation or text boxes to contain these)
- Reference list or bibliography
- Annexes used for: large results tables, computer code listings, data sheet extracts and any other 3rd party information

Spot checking of declared word counts will be carried out by your lecturer and second marker.

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.	20	
1. Machine Vision pattern matching: 2. Colour recognition:	10 10	
2. Knowledge and Understanding of Subject Extent of knowledge and understanding of concepts and underlying principles associated with the discipline.	20	
3. Design of 6 bit Hybrid CAR using MultiSim and VHDL: Design of 6 bit CAR using FPGA:	10 10	
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence	20	
4. Test Results analysis of 6 bit Hybrid CAR and comparison to theory: 5. Analysis of FPGA results: 6. Analysis of PCB test results:	8 8 4	
4. Practical Application and Deployment Deployment of methods, materials, tools and techniques; application of concepts; formulation of innovative and creative solutions to solve problems.	25	
6. CAD testing of 'digital prototype' implementation: 7. FPGA testing of 'digital prototype' implementation:	10 15	
5. Skills for Professional Practice Attributes in professional practice: individual and collaborative working; deployment of appropriate media; presentation and organisation.	15	
Deployment of appropriate media: Report layout: 8. Appropriate conclusion:	5 5 5	

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 1 week late		
	1 st , 2 nd , 3 rd attempt?	1 st	

COMMON ASSESSMENT AND MARKING CRITERIA

	OUTRIGHT FAIL	UNSATISFACTORY	SATISFACTORY	GOOD	VERY GOOD	EXCELLENT	EXCEPTIONAL
Assessment Criteria	0-29%	30-39%*	40-49%	50-59%	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 knowledge and understanding 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 basic knowledge and understanding of the relevant concepts and underlying principles.	Knowledge is accurate with a good understanding of the field of study.	Knowledge is extensive. Exhibits understanding of the breadth and depth of established views.	Excellent knowledge and understanding of the main concepts and key theories. Clear awareness of challenges to established views and the limitations of the knowledge base.	Highly detailed knowledge and understanding of the main theories/concepts, and 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, analytical 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 some logical, analytical thinking and synthesis. Can analyse new and/or abstract 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	Sound, logical, analytical thinking; synthesis and evaluation. Ability to devise and sustain persuasive arguments, and to review the reliability, validity & significance of evidence. Ability to communicate ideas and evidence accurately and convincingly. Sound, convincing conclusions / recommendations.	Thoroughly logical work, supported by evaluated evidence. High quality analysis, developed independently or through effective collaboration. Ability to investigate contradictory information and identify reasons for contradictions. Strong, persuasive, conclusions, justifiable recommendations.	Exceptional work; judiciously selected and evaluated evidence. Very high quality analysis, developed independently or through effective collaboration. Ability to investigate contradictory information and identify reasons for contradictions. Highly persuasive conclusions
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 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.	An adequate awareness and mostly appropriate application of well-established methods, materials, tools and/or techniques. Basic 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 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. Innovation and 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 in a suitable format but with some room for improvement. Can work 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 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 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 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 within a team, showing advanced leadership skills. Work is exceptionally coherent, very fluent and is presented professionally.

SPECIFIC LEARNING OUTCOMES FOR IENG

This section lists the IEng learning outcomes for full accreditation that are relevant to the assignment. The marks allocated are extracted from the Marking Criteria and Student Feedback form. The grade awarded for the particular LO is also shown. These grades are then transferred onto a 'global' sheet related to each student ensuring all IEng LO's are assessed at least twice across all modules

Code	Learning Outcome	Relevant Tasks in Assignment	Marks available	Marks awarded	Grade awarded
Science & Mathematics					
	N/A				
Engineering Analysis					
EA4i	Ability to apply an integrated or systems approach to engineering problems through know-how of the relevant technologies and their application.	Section 3: Section 7: Section 6:	30		
Design					
D3i	Work with information that may be incomplete or uncertain and be aware that this may affect the design.	Section 3	20		
Economic, Legal, Social, Ethical and Environmental context					
	N/A				
Engineering Practice					
EP4i	Ability to use and apply information from technical literature.	Section 3: Section 7: Section 6:	20		