IndEAA

Streamlining course review by industry advisory panels



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1 Acronyms, Abbreviations and Definitions

- UWA: The University of Western Australia
- IAP: Industry Advisory Panel
- EA: Engineers Australia
- EOC: Element of Competency: the basis of the review process. For the purposes of this document, from P05PE Revision 3 by EA.
- IOA: Indicator of Attainment
- DL: Development Level
- Reviewer: A member of a specific IAP evaluating a specific UWA unit against a set of EOCs
- Coordinator: A member of UWA academic staff coordinating the review of a UWA unit
- The Solution, The Tool, The System, The Website, The App or The Portal: The new system being proposed in this document to streamline the existing IAP Review Process

2 Aim and scope

Within the UWA IAP MECH5551 and MECH552 review sub-committee, as part of Engineers Australia accreditation, the process for review is unclear in instruction, inefficient in execution and confusing in final interpretation. The solution will remove these inefficiencies and ambiguities, creating a review process which produces more reliable results in less time.

This project develops a webtool to streamline this process for engineer industry advisory panels to conduct unit reviews.

As of early 2020, there are 51 institutions with EA accredited programs in Australia. Each institution is required to maintain an Industry Advisory Panel, which reviews unit materials to confirm that the elements of competency for engineers are being met at an appropriate level. Each institution has scores of units, which are reviewed on a quinquennial basis.

Issue	Impact	The Solution
EOC's are given by ref-	Requires navigation to additional doc-	Will display information dynami-
erence number	uments to understand the meaning of	cally as-needed and be adaptable
	the EOC	for the user, allowing them to hide
		the information required
Preparing for process	Time loss. Discards formatting of source	Coordinators can upload documents
requires collating mul-	documents, creating ambiguity	and/or provide hyperlinks. The
tiple resources into ex-		system will provide resources via
cel spreadsheet		downloads and hyperlinks which
		will be presented to the reviewer
		when needed.
Unintuitive output for-	Matrix entries are unclear in meaning	Will have users holistically review
mat 3.3	and do not meaningfully translate to	unit outline, unit materials and
	the EOC attainment. Output is cre-	assessments and make an overall
	ated inconsistently. Output suggests	evaluation of each EOC.
	that planned outcomes determine EOC	
	attainment, rather than actual unit-work	
	and assessments	
Comments are rarely	Current process does not realise the po-	Reviewers will select a DL for each
collected on unit ma-	tential for significant constructive feed-	EOC and provide qualitative com-
terial or pre-assigned	back from the industry experts	ment.
DLs for each EOC		
Reviewers require	Creates unnecessary tasks for reviewers	Will use Google Sign-in for lo-
pheme credentials to	and the UWA IT staff, including those	gin, which is easy to implement
access LMS	related to credential expiration. Navi-	and is built on industry standard
	gating LMS is often complex, and older	technology. Documents will be
	IAP members are unfamiliar with the	presented when needed, removing
	system.	navigational complexity

3 Base case

3.1 Procedure

The current procedure, used for the review of MECH5552 is as follows. The issues with this procedure are outlined in greatest detail in Table 1 $\,$

- The review coordinator collects unit materials to be reviewed, and uploads them to the Blackboard Learning Management System (LMS). The IAP members are supposed to access the LMS to review materials.
- The IAP reviewers obtain documents, specifying EOCs, IOAs, and DLs. These need to be reviewed
- The reviewers assess the course, creating the spreadsheet specified in Subsection **3.3**
- The individual spreadsheets created by the reviewers needs to be collated by the review coordinator. This is a manual exercise

3.2 Inputs to Current System

- Unit outlines with outcomes and outcome assessments
- Specifications for EOCs, Dls and IOAs
- Documents related to assessment tasks (descriptions, marking rubrics, complete projects)
- Examples of completed IAP review outputs
- The technical and professional knowledge of the reviewers
- Instructions and guidance on completing the review from the coordinator

3.3 Outputs from Current System

- Primary output: A 2D matrix with rows being labelled by unit outcomes and columns labelled by EOCs at the desired DL. Within the matrix, a cell being filled (with a cross) represents the reviewers belief that a unit outcome contributes to the attainment of the EOC at a specific DL. An example of this output, which is independently created by each IAP reviewer, is shown in Figure 1
- Secondary output (occasional): Unstructured qualitative comments from reviewers assessing whether the assigned DL for each EOC is appropriate given the scope of the unit.

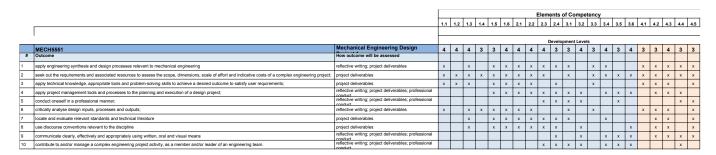


Figure 1: Example output for undergraduate unit

4 Development methodology and overview

This project will create an online system replacing the current procedure described in Section **3.1**. The user-facing element of the system is an online portal which both coordinators and reviewers can access. The portal will allow coordinators to organise the review of a unit, including uploading or linking to materials and assigning reviewers to a unit. The assigned reviewers will be guided through a streamlined process in which they review all materials presented to them and then assess each EOC for the unit as one of the presented DLs. The coordinator will be able to track the reviewer's process and access the review once it is completed. The portal will also support one or more administrators who will manage the portal for their institution through adding and removing coordinators and additional administrators.

The system will be developed in two stages. The goal of the first stage is to develop the prototype required for the coordination of the upcoming MECH551 and MECH5552 review. The system design will be built for two types of users: coordinators and reviewers.

Following this, the second stage of development will create a more general purpose product including one which will add a third class of users — administrators — which can add or remove coordinators from the system.

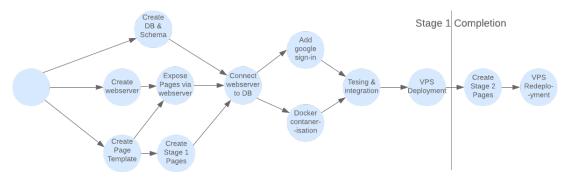


Figure 2: PERT Chart of project tasks

It is estimated that stage 1 will take up approximately 50% of development time, and be completed in mid-June

4.1 PERT Chart

[H] Figure 2 represents the below tasks and the dependencies between them. Tasks

- Create database & schema.
- Create web-server.
- Create web-page template.
- Create stage 1 pages.
- Add Google sign-in.
- Docker containerisation.
- Testing & integration.
- VPS Deployment.
- Create stage 2 pages.
- VPS Redeployment.

5 Stage 1 Functional Requirements

The following are the core functional requirements for the first stage application, which will support the following users: coordinators and reviewers.

5.1 Coordinators

The following is the functionality to be made available to the coordinator by the Stage 1 system.

Identifier	Name	Description
FRC1	Coordinator Login	The coordinator can login using Google Sign-
		In
FRC2	Review Creation	The coordinator can create a new review
FRC3	Review Modification	The coordinator has the ongoing ability to specify and updates attributes of a review. These attributes include its title, the unit be- ing reviewed, start date, planned end date and short description
FRC4	Reviewer Assignment	The coordinator can assign reviewers to a review by their email address
FRC5	Reviewer Removal	The coordinator can remove a reviewer from a review, and optionally the review that they have already completed
FRC6	Upload Materials	The coordinator can upload materials for the review
FRC7	Link to Materials	The coordinator can provide URL's to materials for the review
FRC8	Update Materials	The coordinator can update the description, title or content of materials
FRC9	Remove Materials	The coordinator can remove materials
FRC10	View Results	The coordinator can view the output of the
		review once it is complete

5.2 Reviewers

The following is the functionality to be made available to the reviewers by the Stage 1 system.

Identifier	Name	Description
FRR1	Reviewer Login	The reviewer can login using Google Sign-In
FRR2	View review projects	When logged in a reviewer can see the re-
		views they are assigned, their due dates and
		their progress
FRR3	Access and view mate-	The reviewer is given access to the materials
	rials	at the beginning of the review process and
		has ongoing access as they complete the re-
		view
FRR4	Affirm materials viewed	At the beginning of the process the review
		individually affirm their viewing of each ma-
		terial they have been provided
FRR5	Assign DL for EOC	For each EOC, assign a DL achieved for this
		unit. Descriptors for EOCs, DLs and IOAs
		will be displayed at the time of evaluation.
FRR6	Comment on EOC	For a given EOC, the reviewer has the op-
		portunity to provide textual comment
FRR7	Give General Com-	At the end of the review process, the re-
	ments	viewer has the opportunity to give general
		comments
FRR8	Submit Review	After completing all steps the reviewer will
		submit their review

6 Stage 2 Functional Requirements

The following are the additional functional requirements for the second stage application, which will support for the following users: coordinators, reviewers and administrators. There is no additional functionality to be made available to the reviewer by the Stage 2 system.

6.1 Administrator Functional Requirements

The following is the functionality to be made available to the new "administrator" user class by the Stage 2 system.

Identifier	Name	Description
FRA1	Administrator Login	The administrator can login using Google
		Sign-In
FRA2	Add Coordinator	The administrator can add coordinators to
		the system.
FRA3	Remove Coordinator	The administrator can remove coordinators
		from the system
FRA4	Promote Coordinator	The administrator can make a user who is a
		coordinator an administrator
FRA5	Add Administrator	The administrator can add administrators to
		the system
FRA6	Remove Administrator	The administrator can remove administra-
		tors from the system
FRA7	Demote Administrator	The administrator can make a user who is an
		administrator a coordinator

6.2 Coordinator Functional Requirements

The following is the functionality to be made available to the coordinator by the Stage 2 system.

Identifier	Name	Description
FRC11	Collaborating Coordi-	The coordinator can add additional coordi-
	nators	nators who have the same functionality avail-
		able to them as the initial coordinator
FRC12	View Progress	The coordinator can view the overall progress
		of a review and the individual progress for
		each reviewer
FRC13	Generate Report	Once the review has been completed, the co-
		ordinator can generate a report detailing the
		review process, the results of the review and
		the materials used. This export should either
		be exportable as a Word Document
FRC14	Review Archiving	The coordinator can archive a review which
		doesn't have "active" status. Archived re-
		views are less prominently displayed on the
		portal, although still accessible
FRC15	Review Unarchiving	The coordinator can unarchive a previously
		archived review
FRC16	Custom EOCs	The coordinator can augment the base set of
		EA Elements of Competency.

FRC12, FRC14 and FRC15 are regarded as "nice-to-have" functionality rather than strict requirements

Identifier	Name	Description
NFR1	Extensibility	The system should be able to be easily ex- tended and customised for new contexts
NFR2	Security	Modern security standards will be followed to ensure that confidential information (see Subsection 8.3) is only accessible by the de- sired users. Furthermore, only authenticated and authorised users will be able to perform actions such as reviewing a unit, uploading materials or assigning reviewers
NFR3	Compatibility	The application will be compatible with re- cent versions of the major browsers (Safari, Chrome, Firefox and Edge) on Laptop and Desktop computers
NFR4	Performance	The page should have a size < 500KB and a loading time < 3 seconds on most desktop computing environments on standard NBN internet connections
NFR5	Recoverable	In the event of the web server or database server crashing, all stored data should be fully recoverable
NFR6	Portability and De- ployability	The system should be able to be deployed across a wide range of server infrastructure. This will eliminate the need for additional development time if the system needs to be moved from it's original location or is adopted outside of UWA. This also simplifies the development process and prevents initial development from consuming UWA server re- sources.

7 Non Functional Requirements

8 Proposed Solution

8.1 Core Technologies

It is proposed that this solution will be built on the MEAN stack, consisting of MongoDB, ExpressJs, Angular and NodeJs. This comprehensive stack exclusively utilises JavaScript, allowing for a greater integration between components and therefore reduced development time & costs. Google sign in will be used for authentication, and the system will be built as a docker container connecting to a MongoDB Atlas database.

The licenses for the software of the MEAN stack (SSPL, MIT License, MIT and MIT respectively) allow for the stack to be used in this context.

8.1.1 MongoDB

MongoDB is a noSQL database solution that is efficient and flexible with minimal overhead. It would fulfil all data storage requirements of the system.

8.1.2 NodeJS

NodeJS is a common technology used to build the backend of the web applications. It will be used as the interface between the website and the database, appropriately delivering webpages.

8.1.3 Angular

Angular is a popular frontend technology to create easily usable websites. As it is a framework, it is considered a complete solution to creating the user-facing portion of the system.

8.1.4 Docker

To satisfy NFR6, the system must have the smallest number of dependencies and requirements. As a result, the backend webserver will be built as a docker image. This will mean the only requirement to run the webserver on any machine is docker

8.1.5 Google Sign-In

Google Sign-In will be used as the sole authentication method for this project. This has the benefit of bypassing pheme, allowing reviewers to avoid creating an account or refreshing expired passwords. Google is practically universally adopted, so it is expected that all reviewers will have at least one Google account.

Google Sign-In uses the OAuth2 protocol and OIDC, the industry standards for user authentication and authorisation. Implementing Google Sign-In is achieved by interfacing with popular and well-maintained libraries of code. It completely avoids storing user passwords. As a result, Google Sign-In simplifies and strengthens the attainment of NFR2(security)

8.1.6 Code style and quality

Written code, especially javascript, will conform to the applicable "Google Style Guide", as found on https://google.github.io/styleguide/.

Written code will be reviewed in accordance to the System Health Lab code-review procedures

8.1.7 Code storage and development control

The Git version control system will be used, using the remote UWA System Health Lab organisational GitHub

8.2 Screenshots

These screenshots represent one possible appearance of the system after the completion of development stage 2. However these designs will continually be improved and tweaked during the development process, and primarily serves to illustrate the overall feel of the app alongside prototyping page flow.

The UI design for administrators can be found here:

https://www.figma.com/proto/71COIKoUM5Y1YZuQyO9zS4/IAP?node-id=57%3A262&scaling= scale-down

The UI design for coordinators can be found here:

https://www.figma.com/proto/71COIKoUM5Y1YZuQyO9zS4/IAP?node-id=57%3A262&scaling= scale-down

The UI design for reviewers can be found here:

https://www.figma.com/proto/71COIKoUM5Y1YZuQyO9zS4/IAP?node-id=4%3A3&scaling=scale-down

Select screenshots can be found in Appendix B

8.3 Information management and Atlas

The materials prepared for the review process, the results of the review process and the information of all users will all be treated as sensitive information. The use of Google Sign-In will decrease the sensitive information which the application stores as the system will not need to manage the secure storage of passwords.

The cloud database service MongoDB Atlas will be used to store all backend information. Utilising this service will drastically simplify the development process. Atlas offers three cloud providers — AWS, GCP and Azure — which actually provides the cloud software. Based on the rationale in Appendix **A**, AWS was selected as the cloud provider. The ap-southeast-2 availability zone will be used, which will ensure that all system data is stored in Australia.

8.4 Execution Team

The development of the system will be performed by Marcus Handley. Caitlin Woods will provide advice on technology choices and implementation and will run code reviews. Professor Melinda Hodkiewicz is the academic liaison.

Marcus Handley's linkedin can be found here:

https://www.linkedin.com/in/marcus-handley-a2a6b1179

Caitlin Wood's linkedin can be found here:

https://www.linkedin.com/in/caitlin-woods/

Professor Melinda Hodkiewicz is a professor of mechanical engineering at UWA.

Appendix A Cloud provider cost comparison for Mongo DB Atlas

Mongo DB Atlas offers 3 cloud service provided: Amazon Web Services (AWS), Google Cloud Platform (GCP) and Azure each with different minimum cluster sizes, availability regions and cost models. This appendix lays out the justification of the **recommended cloud service provider** — **AWS**.

Atlas offers a free M0 cluster which may be appropriate for initial development but is not suitable for production use due to it not being offered in any Australian Access Zones and lack of backup options.

The following calculation uses pricing for the cheapest Australian availability zones — AWS: ap-southeast-2, GCP: australia-southeast1, Azure: australiaeast.

A.1 Data transfer and storage requirements

The recent MECH5552 had approximately 24MB of documents uploaded. The average completed review would contain less than 5KB of data. As a result, it it estimated that one review would require 25MB of data storage. The storage requirements of other data (e.g. users of system) are likely insignificant. As the webserver will employ strategies such as the caching of static documents to avoid unnecessarily data-transport costs from Atlas. As a result, static documents will only be fetched once per instance of the webserver.

It is estimated that the webserver will be redeployed at most once a week, once in production, although this estimate is highly dependent on stability. Therefore data storage and transfer requirements can be estimated as

- Storage Requirements: 25MB / review
- Transfer Requirements: 100 MB / active review / per month

Below are three possible scenarios and their associated data requirements

Development: 2 active reviews and 5 times data transfer due to active system development.

Necessitates 50MB of storage and 1GB of the data transfer / month

Light adoption: 5 active reviews.

Necessitates 125MB of storage and 0.5 GB of data transfer / month

Heavy adoption: 10 active reviews and 10 inactive (i.e. completed) reviews.

Necessitates 500MB of storage and 1GB of data transfer / month

A.2 Choice of service provider

With AWS as a cloud service provider, the minimum cluster size is M2 providing 2GB storage and Shared RAM costing 9 USD per month. With either GCP or Azure as a selected cloud service provider the minimum cluster size is M10 providing 2GB RAM and 32GB storage costing 90 USD per month. All three usage scenarios would have their storage needs satisfied by the M2 cluster. As only AWS offers this small a cluster size, the monthly storage cost of AWS is a tenth of that of either GCP and Azure, saving 80 USD per month.

Data transfer costs vary between provider and nature of transfer, from 1 to 19 US cents per GB. The monthly cost difference for transfer between services at the estimated 1GB / month is more than 1 and a half orders of magnitude below the \$80 USD saving which AWS provides.

There are various backup data services within a similar price range to the above data transfer costs.

As a result of the above analysis, AWS is the recommended cloud service provider to be used with MongoDB Atlas due to its reduced costs.

Appendix B Select UI Screenshots

Designs of key UI screens are below. A more completed UI design with prototype interactions can be found in the links specified in subsection 8.2

	IndEAA Manage UWA System	Logout Logged in as Marcus Handley	Back		^{једа} H5521	Logged in as Marcus Handley
			Overview & EOCs	Documents	3 Assessment	A Review
Manag	ge coordinators and administrators		1			
	lodkiewhich Coordinator Remove		EDC Set 2			
Melinda.Hodkie Added by you or	which@gmail.com 22-Jun-2019 Make administrator		EDC Set 3			
Joe Nativ	e Coordinator Remove		C DLs			
Native@gmail.c Added by you or	om 22-Feb-2017 Make administrator		Level of Development		AQF Level	Predominant Bloom Levels
			 Foundational Developing a foundation for university level study 			1-3: Remebering, understanding a applying
Elon Musi Athos@gmail.co Added by you or	m Administrator		2. Broad and Coherent Sufficient capability to enter the workforce as a no	on-engineer	 Board and Coherent Knowledge and skills for work and/or further learning (Bacehlors) 	3-4: Applying and analysing
	ON Administrator Remove		 Advanced Sufficient capability for proffesional practice as a 	starting engineer	 Advanced knowledge and skills for professional/highly skilled work and/or further learning (Honours) 	4-6: Analysing, evaluating and cr
Mutto@gmail.co Added by you or	0m 21-Jun-2019 Make coordinator		 Specialist Selected areas of strength beyond the requirement practice 	nt for entering professional	 Specialised knowledge and skills for research and/or professional practice and/or further learning (Masters) 	4-6: Analysing, evaluating and cr
(a) A	Add a new coordinator or administrator +		(d) Step 1 of re	-	-	pment Lev
(a) A		Logout Logout net Mensa Haraky	Back	MEC	1EAA H5521	pment Leve Legent Legent in an Marcal Handry
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(a) A	dmin landing page	Logout	Back	MEC	1EAA H5521	pment Leve Legeut Legeut es al Marcei Fundey
	dmin landing page. IndEAA Current Reviews	Logout Lugged in at Maccal Handay	Back Overview & ECCE Course Documents Please review following These should from the	Inc MEC	1EAA H5521 3 Acassument	Loggott Logged in as Marcus Hundley
	dmin landing page. IndEAA Current Reviews	Logout	Back O pervise & ECC Course Documents Please every following	Inc MEC	1EAA H5521 3 Assessment	pment Leve Logou Logot in a Maco Made Logot in a Maco Made Step 2
CH5521 be completed	dmin landing page	Logout Legged in se Mensee Harveley Due 32/13/1910	Back Course Documents Please review following These should from the Elements of Competence	Inc MEC	IEAA H5521 (2) Assessment 21 course. W MECH5S21 contributes to the attainment	pment Leve Leget in a Marca tradity Leget in a Marca tradity Step 2
ICH5521 To be completed ICH5522	dmin landing page	Logout Lugged in at Maccal Handay	Back Course Documents Phase answer for mining Phase answer for mining MECH5521 Outline	Inc MEC	IEAA H5521 a Assessment 21 course. w MECH5521 contributes to the attainment Design Project Outline	pment Leve Legert Lever to Hotel Carrow Step 2 nt of the
ИЕСН5521	dmin landing page	Logout Legged in se Mensee Harveley Due 32/13/1910	Back Course Documents Please review following These should from the Elements of Competence	Inc MEC C Documents documents from the MECH555 basis of your assessment of ho y outlined in Step 1	IEAA H5521 (2) Assessment 21 course. W MECH5S21 contributes to the attainment	pment Lev Leget is a Marce taulor entropy of the Step 2 story 2000
IECH5521 To be completed IECH5522	dmin landing page	Logout Legged in se Mensee Harveley Due 32/13/1910	Back Course Documents Pease review following These should form the Bernents of Competence MECH5521 Outline MECH5521 docx liphender highwar20	Inc MEC C Documents documents from the MECH555 basis of your assessment of ho y outlined in Step 1	IEAA H5521 (a) Assessment 21 course. M MECH5521 contributes to the attainment Design Project Outline C Design Project Outline	pment Lev Leget is a Marce taulor entropy of the Step 2 story 2000

(b) Reviewer landing page

(e) Step 2 of review process: Documents

	IndEA/ MECH5			Logout Marous Handley		IndEAA MECH5521	
0 Overview & EDCs	Documents	3 Assessment —	Review		Overview & EDCs		sessment 4
JC Set 1					EOC 2.1	EOC 2.2	EOC 2.3
1.1 1.2	1.3	1.4	1.5	1.6	Application of established engineering methods to complex engineering problem solving.	Fluent application of engineering techniques, tools and resources.	Application of systematic engineering sy design processes.
1.2 Conceptual understanding					conducts or direct and brookers set and		acada haaraaca
Conceptual understanding of the mathematics	s, numerical analysis, statistics, and c	computer and information scie	iences which underpin the engi	neering discipline	Level of Development	Level of Development	Level of Development
Indicators of Attainment					1. Foundational	1. Foundational	1. Foundational
Develops and fluently appplies relevant investigation analys		mediation and union and allow design	size matrice management and tables	hand a day and a second second	2. Broad and Coherent	2. Broad and Coherent	2. Broad and Coherent
and communication tools and techniques pertinent to the er	ngineering discipline.	prediction evaluation, modering, decis	sion making, measurement, evaluation, i	knowedge management	3. Advanced	3. Advanced	3. Advanced
				Back Next Tab	4. Specialist	4. Specialist	4. Specialist
DC Set 2						7	
						EOC 2.4	
JC Set 3						Application of systematic approaches to the conduct and management of engineering projects	
4						Level of Development	
						1. Foundational	
						2. Broad and Coherent	
						3. Advanced	
						4. Specialist	

(c) Step 1 of review process: Elements of Competency (f) Step 3 of review process: Evaluation

Figure 3: Screenshots

		Back	IndEAA MECH5523	Logout Logged in as Melinda Hodiliewicz
IndEAA Manage reviews	Logged in as Melinda H	Logout la Hockiewicz MECH5523	Created by you	Review description
MECH5521 - 75% completed Underway – View Progress and Manage Reviewers	Due 30/04/2020	Review was completed or Review has been marked		We are evaluating at what Development Level MECH5523 allows students to attain the Engineers Australia Elements of Competency. To perform the evaluation you have been provided with documents from the MECH5523 course including project outlines, completed projects, marked projects and the course outline.
MECH5522 Under construction — Add Documents, Enter Details and Manage Reviewers	Due 05/10/2021	Marcus Footley Completed review Marcus Handley	Net EOS & BLL Net Downers Review Course Environ & Extern	View documents ▲ Design Project Outline Design/Project.docx Uplewedd on 15/Mar/20
MECH5523 Completed – Export results, archive or reopen	Completed	Completed review	View reviewers	Specifies the scope of the design project including expectations Example of Mech Design Project Control StudentSubmission docx Velawled en 15/Mer/0 A submitted mechanical design encortect which reflects an approx1
Show Archived				RTIO Project - J slack tool ∅ www.docs.google.com/?q=oUMSY1_Added in 15Mar/28 Outline received from sponsoring engineering from As the review is complete documents cannot be edited As the review is complete documents.cannot be edited

(c) Complete review (coordinator's view)

		(-)	- · · ·			(
(a) Coordinator la	anding page					IndEAA —MECH	5523	
Back IndEAA MECH5521 ²	Logout Cogged in as Melinda Hoskiewicz		Reviewer	1.1	1.2	1.3	1.4	1.5
MECH5521 Created by you Review target due date: 30/04/2020 🔗	Review description (provided to reviewers) 🤌 Edit We are evaluating at what Development Level MECH5521 allows	M	Median DL (Range) Marcus Handley Marcus Footley	3 (3) 3 3	3 (3) 3 3	3 (3) 3 3	4 (4) 4 4	3.5 (3-4) 4 3
I/2 reviews have been completed Entre Completion Marcus Footley Completed review Image: Completed review	students to attain the Engineers Australia Elements of Competency. To perform this evaluation you have been provided with documents from the MECH5521 course including project outlines, completed projects, marked projects and the course outline.		Reviewer Aedian DL (Range) Reviewer Aedian DL (Range)	2.1 3 (3) 3.1 3 (3)	3 (3) 3.2 3 (3)	2.2 3.3 3 (3)	2.3 3 (3) 3.4 3 (2-4)	4 (4) 3.5 3.5 (3-4)
Marcus Handley Interfact State Marcus Meeting Marcus Meeting Manage other coordinators Manage reviewers Marcus Handley <	Manage documents	EOC N EOC S EOC	C 1.1 Veither the course out C 1.2 Strong focus on statist C 2.1 appenciate the strong	line or the rubri	Comments Comments c specifically m ter sciences	- Marcus Ha - Marcus Fo entions innovati	ndley otley ve solutions	
Invite a new reviewer +	Link to or upload a new document +		C 3.4 No mention of docume	ent control proc	edures			

(b) Ongoing review (coordinator's view)

	1.1	1.2	1.3	1.4	1.5	1.0	6	
Median DL (Range)	3 (3)	3 (3)	3 (3)	4 (4)	3.5 (3-4)	4 (4)		
Marcus Handley	3	3	3	4	4	4		
Marcus Footley	3	3	3	4	3	4	"	
Reviewer	2.1		2.2	2.3	3	2.4		
Median DL (Range)	3 (3)	3 (3)	3 (3)	4 (4)		5	
Reviewer	3.1	3.2	3.3	3.4	3.5	3.0	6	
Median DL (Range)	3 (3)	3 (3)	3 (3)	3 (2-4)	3.5 (3-4)	4 (4)	5	
EOC 1.1								
Neither the course ou	tline or the rubr	c specifically m	nentions innovat	ive solutions				
			nentions innovat	ive solutions				
Neither the course ou EOC 1.2	stics and compl	ter sciences						Download R
Neither the course ou EOC 1.2 Strong focus on statis	stics and compu g focus on syste	ter sciences matically decid						Download R

(d) Results of review (coordinator's view

Figure 4: Screenshots(continued)