Part A: Course Information

1.	Course Code & Course Title:	UECS3383 Software Quality Assurance
2.	Year of Study (Programme):	Y2T2 or Y3T2(Bachelor of Science (Honours) Software Engineering)
3.	Credit Hour:	3
4.	Lecturer:	Dr Wong Whee Yen, Winnie
5.	Tutor:	Dr Wong Whee Yen, Winnie Mr Wong Chim Chwee
6.	Year and Trimester:	2021 January
7.	Synopsis:	Software quality assurance is used to monitor the various software engineering processes in order to ensure appropriate quality. This course provides a broad understanding of the various aspects of quality assurance. It expounds the various methodologies used to measure and enforce quality, as well as the context in which they can be employed within a typical software project. Some of the more common tools utilized for this purpose will be described and their usage in specific quality assurance use cases will be detailed.
8.	Course Learning Outcomes (CO):	1. Describe the importance and activities of software quality assurance 2. Formulate appropriate software quality assurance approaches for specific software projects 3. Determine effects of various software quality improvement approaches 4. Determine appropriate tools for measuring software quality improvement 5. Apply appropriate tools for measuring or improving the software engineering process
9.	References:	Main References: 1. Goericke, S., 2019, The Future of Software Quality Assurance, Germany:Springer 2. Shah, N.C., 2019, Software Quality Assurance and Testing for Beginners. LA:Nittin Shah 3. Mistrik, I., Soley R., Ali N., Grundy, J. & Tekinerdogan, B., 2015. Software quality assurance: In large scale and complex software-intensive systems . MA: Morgan Kaufmann 4. Fenton, N. & Bieman, J., 2014. Software metrics: A rigorous and practical approach (3rd ed). Boca Raton: CRC Press Additional References: 1. Chemuturi, M., 2010. *Mastering software quality assurance: Best practices, tools and techniques for software developers.* Pine Island: J. Ross Publishing 2. Jones, C. & Bonsignour, O., 2011. *The economics of software quality. Boston* , MA: Addison Wesley 3. Linz, T., 2014. *Testing in Scrum: A guide for software quality assurance in the agile world* . CA:Rocky Nook
10.	Class/Tutorial Microsoft Teams Code	Lecture – **bh73s3b** Tutorial (Dr Wong Whee Yen, Winnie): T1: **hem8vch** Tutorial (Mr Wong Chim Chwee): T2, T3, T4: **3m1yitd**

Part B: Methods of Assessment

No	CO	Progra mme Outcom es (PO)	Domain & Taxonomy Level# *(e.g. A2 / C3)*	Teaching Methods *(L = Lecture, T = Tutorial, P = Practical, O = Others)*	Assessment Methods & Mark Breakdown* *(Te = Test, Q = Quiz, A = Assignment, P = Practical, Pre = Presentation, CaS = Case Study, FE = Final Exam, O = Others)*						
					Mid Term (15%) (T)		Assignment (35%) (A)			Case Study (CaS) (10.0%)	Final Asses sment (T)
					Part A (7. 5%)	Part B (7.5%)	Part A (10%)	Part B (20%)	Present ation (5%)	(10%)	40%
1	CO1	PO1	C4	L,T	X						
2	CO2	PO1	C4	L,T			X				X
3	CO3	PO6	C5	L,T		X					X
4	CO4	PO6	C4	L,T				X		X	X
5	CO5	PO5	A4	L,T					X		

#*Domain – Affective (A), Cognitive (C), Psychomotor (P); Taxonomy Level – A (Level 1 – 5), C (Level 1 – 6), P (Level 1 – 5).*

All COs must be assessed by at least one assessment method (ensure that the only assessment method is not an optional choice).

Individual breakdown of marks for an assessment method (i.e. one assessment question / part mapped to only one CO) is not necessary in the teaching plan. Individual breakdown of marks is only required when preparing the assessment moderation form.

Part C: Continual Quality Improvement (CQI)

No.	**Proposed Improvement Action(s)** **(from previous trimester Course Report)**	**Plan for this Trimester** *(action(s) must be shown in Part D, if applicable)* **(to be transferred to this trimester Course Report)**
1	To have one topic on the first lecturer to introduce SQA from the perspective of Software Project Management as Software Quality Assurance is one of the knowledge area from UECS2033 SPM.	Students' projects are to track the deliverables for each phase so that it will be used as input for the next phase. This will be reflected in the weekly log.
2	To include case study of software quality improvement into tutorial for discussion	Tutor to include case study discussion during tutorial class.
3	To have students involve in case study participation during tutorial and lecture	Lecturer to include case study discussion during lecture class.

Part D: Weekly Plan (Lecture, Tutorial, Practical, Assessment, CQI Action, Activity etc.)

Week	Lecture Topic (including sub-topics)	Online Lecture (synchronous) Hour	Online Tutorial / Practical (synchronous)	Online Assessment	Remarks (CQI Action / Activity)
1	**Topic 1: Introduction to Software Quality Assurance** • Introduction and defining software quality • Benefits and economic value of software quality • Quality objectives	3	Tutorial 1	-	• Assignment Grouping • Distribution of Assignment and Case Study, 19th Jan 2021 • Introduction of UECS3383 SQA from the perspective of IT Project Management • Students will form discussion group during tutorial session for case or scenario discussion **Specific Tasks: (Assignment)** • Identify components of assignment • Sharing and discussion of Project Quality Plan and Software Quality Plan in the IT industry • Distribution of procedure, guideline, work instruction, standard, SOPs, process, process flow, flow chart etc. of different business unit from UTAR • Distribution of material on Change Control Management for IT project **Specific Tasks:** • Identify components of case study

					• Discussion and role play of TM (SQA and non-SQA) from the case study
2	**Topic 1: Introduction to Software Quality Assurance** • Introduction and defining software quality Benefits and economic value of software quality objectives	1	Tutorial 1	-	-
	Topic 2: Methodologies for Quality management • Process improvement models • Corrective Action Procedures Audit Types, Roles and Responsibilities, Audit Process	2			
3	**Topic 2: Methodologies for Quality management** • Process improvement models • Corrective Action Procedures Audit Types, Roles and Responsibilities, Audit Process	2	Case Study Discussion	-	During Lecture: Discussion on Case Study & Assignment
	Topic 3: Estimating and measuring software quality • Cost of Quality • Estimating Software Defect • Detection and Defect Removal Estimating economic impact of high quality and low quality software	1			
4	**Topic 3: Estimating and measuring software quality** • Cost of Quality • Estimating Software Defect • Detection and Defect Removal Estimating economic impact of high quality and low quality software	3	Tutorial 2	-	During Lecture: Discussion on Case Study & Assignment
5	**CNY**	-	-	-	-
6	**Topic 3: Estimating and measuring software quality** • Cost of Quality	3	Tutorial 2	Case Study Submission	-

	• Estimating Software Defect • Detection and Defect Removal • Estimating economic impact of high quality and low quality software			• Date: 22nd Feb 2021, Monday • Time: 5:00 PM • Submission: WBLE	
7	**Topic 3: Estimating and measuring software quality** • Cost of Quality • Estimating Software Defect • Detection and Defect Removal • Estimating economic impact of high quality and low quality software **Topic 4: Risk Management** • Risk Management Models • Safety and Hazard Analysis	1 2	Tutorial 3	-	-
8	**Topic 4: Risk Management** • Risk Management Models • Safety and Hazard Analysis **Topic 5: Utilization of metrics** • Basic measurement theory • Quality and Analysis Tools • Software metrics and reporting tools • Process metrics	2 1	Tutorial 4	Mid Term • Date: 10th March 2021, Wednesday • Time: 8 – 9 AM • Via: Online • Submission: WBLE	During Lecture: Discussion on Assignment
9	**Topic 5: Utilization of metrics** • Basic measurement theory • Quality and Analysis Tools • Software metrics and reporting tools • Process metrics	3	Tutorial 5	-	-
10	**Topic 5: Utilization of metrics** • Basic measurement theory • Quality and Analysis Tools • Software metrics and reporting tools • Process metrics	3	Tutorial 6	Assignment Part-A Submission • Date: 22nd Mar 2021, Monday • Time: 5:00 PM • Submission: WBLE	-
11	**Topic 5: Utilization of metrics** • Basic measurement theory • Quality and Analysis Tools • Software metrics and	1	Tutorial 7	-	-

	reporting tools Process metrics **Topic 6: Testing, Review and Inspection** ● Software testing ● Peer Reviews, Walkthroughs Inspections: roles, process, meeting and follow up	2			
12	**Topic 6: Testing, Review and Inspection** ● Software testing ● Peer Reviews, Walkthroughs ● Inspections: roles, process, meeting and follow up **Topic 7: Software Configuration Management** ● Configuration management tools and infrastructure ● Configuration control and accounting Configuration Audits	2 1	Tutorial 8	Assignment Part-B Submission ● Date: 5th Apr 2021, Monday ● Time: 5:00 PM ● Submission: WBLE	-
13	**Topic 7: Software Configuration Management** ● Configuration management tools and infrastructure ● Configuration control and accounting ● Configuration Audits	3	Presentation	Presentation Slides Submission ● Date: 12th Apr 2020, Monday ● Time: 5 PM ● Submission: WBLE	
14	**Revision & Presentation**	-	-	-	Release Coursework Marks (23rd Apr 2021)

This Teaching Plan is:

Prepared by:	Moderated by:	Approved by:
	D.Gunavathi	
Name: Wong Whee Yen Course Coordinator	Name: Gunavathi Duraisamy Moderator	Name: Ts Dr Madhavan Nair Head of Department
Date: 3 Jan 2021	Date: 8 Jan 2021	Date:08/01/2020

Part E: Checklist

No.	Checklist	Course Coordinator	Moderator
Attachments			
1.	Latest course syllabus approved by Senate from UTAR Portal is attached.	YES	YES
2.	Previous trimester course report is attached.	YES	YES
Part B: Methods of Assessment			
1.	CO-PO mapping, domain & taxonomy level, teaching methods and assessment tally with the latest course syllabus approved by Senate in UTAR Portal.	YES	YES
2.	Assessment and percentage tally with the teaching workload approved by Senate.	YES	YES
3.	All COs are assessed by at least one assessment method.	YES	YES
Part C: Continual Quality Improvement (CQI)			
1.	All Proposed Improvement Action(s) from previous trimester Course Report is stated and is specific*. *avoid just stating "continue current practice" or "provide more examples", spell out what is the current practice or provide more examples in which topic.*	YES	YES
2.	Action(s) for Plan for this Trimester is shown in Part D (if applicable)	YES	YES
Part D: Weekly Plan (Lecture, Tutorial, Practical, Assessment and CQI Action)			
1.	Total 14 rows for 14 weeks (long trimester) or 7 rows for 7 weeks (short trimester). Cells are not merged together.	YES	YES
2.	All topics (main and sub-topics) in course syllabus are listed in the weekly schedule.	YES	YES
3.	Online learning (synchronous) lecture hours for each topic are at least equal to the allocated F2F hours in course syllabus.	YES	YES
4.	There are activities* for each week and no week is empty without any activity. *example of activities: lecture / tutorial / practical / presentation / test preparation / assignment submission preparation / revision / public holiday and replacement announcement etc.*	YES	YES
5.	**For Long Trimester:** **For non-100% coursework course:** No assessment in Week 1, 2 and no written assessment in Week 13, 14. **For 100% coursework course:** No assessment in Week 1, 2. **For Short Trimester:** **For non-100% coursework course:** No assessment in Week 1 and no written assessment in Week 7. **For 100% coursework course:** No assessment in Week 1.	YES	YES
6.	Date for test / quiz / presentation / assignment submission is indicated.	YES	YES
7.	Date to release continuous assessment marks* in WBLE is indicated in Week 14 (long trimester) or Week 7 (short trimester).	YES	YES

	for 100% coursework course (i.e. course without final examination), only 50% to 80% of the marks are allowed to be released to student by Week 14 / Week 7.		
8.	Dash "-" or "N/A" (if not applicable) is inserted for all empty cells.	YES	YES