STAT09008
Six Sigma Management

Full Title	Six Sigma Management		
Status	Uploaded to Banner	**Start Term**	2020
NFQ Level	09	**ECTS Credits**	05
Module Code	STAT09008	**Duration**	Semester - (13 Weeks)
Grading Mode	Numeric	**Department**	Physical & Life Sciences
Module Author	Trish OConnell		
Co Authors	Eugene McCarthy		

Module Description

The module introduces the concepts of operational excellence and examines their applications to the Life Sciences. This module aims to give the student the necessary skills to plan and implement a range of Six Sigma programme activities in a workplace environment.

The module will focus on the tools & techniques required to reduce process variability and thereby achieve Lean Six Sigma in manufacturing and ensure continuous process improvement.

	Learning Outcomes ***On completion of this module the learner will/should be able to:***
1.	Capitalise on the synergy between Lean and Six Sigma and construct an enterprise wide view of their application in the Life Science sector.
2.	Develop and lead the implementation of a Lean Six Sigma program activity.
3.	Recommend/Implement statistical tools from the Six Sigma Define Measure Analyse Improve Control (DMAIC) toolkit for process improvement.
4.	Evaluate and apply appropriate strategic and tactical design tools (DFSS).

Indicative Syllabus

Indicative syllabus.

Enterprise-Wide Deployment

Organizational Process Management and Measures

General History of Six Sigma & Continuous Improvement

Voice of the Customer

Critical to Quality Characteristics (CTQ's)

Cost of Poor Quality

Value add vs non-value add activities

The seven forms of muda

Lean thinking

The DMAIC tools: process mapping/SIPOC/Fishbone/Control charts/Capability analysis

Hypothesis testing:normality/ t-tests/Mann-Whitney

Correlation & Regression

Data Collection

Risk Analysis - SWOT

Design for Six Sigma

Strategic and Tactical Design Tools: FMEA/DOE/QFD

Indicative Practicals and/or Enquiry Based Learning Scenarios: Application of various tools in DMAIC process; Capturing the voice of the customer; Planning a six-sigma project.

Teaching and Learning Strategy

Teaching and learning methods will involve a combination of lectures, case-study analysis and enquiry based learning.

Assessment Strategy

Continuous assessment will be via the assessment of EBL assignments, and other assignments, and this is worth 60%. The final exam is 40%.

Repeat Assessment Strategies

Repeat assessment rules will comply with the academic policies and procedures of GMIT

Indicative Coursework and Continuous Assessment:		**60 %**		
Form	***Title***	***Percent***	***Week (Indicative)***	***Learning Outcomes***
Assessment	Mid term exam	30 %	Week 4	1,2
Assignment	EBL assignment	30 %	Week 11	3,4

End of Semester / Year Formal Exam:		**40 %**		
Form	***Title***	***Percent***	***Week (Indicative)***	***Learning Outcomes***
Assessment	Final exam	40 %	Week 14	1,2,3,4

Blended Delivery Mode Average Weekly Workload:			**3.00 Hours**		
Type	***Description***	***Location***	***Hours***	***Frequency***	***Weekly Avg***
Lecture	Lecture	Online	2	Weekly	2.00
Tutorial	EBL	Online	1	Weekly	1.00

Required Reading Book List

Paul, T., (2018). *The Six Sigma Handbook, 5E*. McGraw-Hill Education.
ISBN 1260121828 ISBN-13 9781260121827

Sproull, B., (2019). *Theory of Constraints, Lean, and Six Sigma Improvement Methodology*. Productivity Press.
ISBN 0367247097 ISBN-13 9780367247096

Roderick, G., (2015). *The Certified Six Sigma Green Belt Handbook, Second Edition*. Quality Press.
ISBN 9780873898911 ISBN-13 0873898915

Voehl, F., (2013). *The Lean Six Sigma Black Belt Handbook: Tools and Methods for Process Acceleration*. Productivity Press.
ISBN 1466554681 ISBN-13 9781466554689

Keller, P., (2011). *Six Sigma Demystified, 2nd Edition*. McGraw-Hill.
ISBN 007174679X ISBN-13 9780071746793

Journal Resources

BioProcess International™ is a monthly, controlled-circulation magazine devoted to the development, scale-up, and manufacture of biotherapeutics and biodiagnostics. https://bioprocessintl.com/

Online Resources

The ASQ pharmaceutical community :https://my.asq.org/communities/home/176

Programme Membership

GA_SADVG_O09 202000 Postgraduate Diploma in Science in Advanced Biopharmaceutical Science
GA_SBIOG_V09 202100 Master of Science in Biopharmaceutical Manufacturing
GA_SBIOG_N09 202100 Certificate in Biopharmaceutical Manufacturing