

BIOTECHNOLOGY OPERATIONS & QUALITY MANAGEMENT

(BOQ470S)



FACULTY OF APPLIED SCIENCES

DEPARTMENT of BIOTECHNOLOGY AND CONSUMER SCIENCE

Advanced Diploma Biotechnology

2021

Subject Outline 2021

DEPARTMENT:	Biotechnology and Consumer Science				
QUALIFICATION AND CODE:	Advanced Diploma In Biotechnology	ADBIOT			
SUBJECT AND CODE:	BIOTECHNOLOGY OPERATIONS & QUALITY MANAGEMENT (BOQ470S)				
LEVEL OF STUDY:	4	SAQA CREDITS:	7.5	SEMESTER :	2
LECTURER CONTACT DETAILS:	Name Prof D Gyure				
	Email gyured@cput.ac.za				

OUTCOMES/ TOPICS	LECTURE DATE
1. Understand the basic concepts of Operations Management and Quality Management and their importance in biotechnology industries	14 Sept
2. Understanding specific challenges in Operations Management such as managing supply chain, people and leadership issues, risk management and continuous improvement	16 Sept
3. Be able to read a basic Profit and Loss statement for a business and predict profitability and sustainability	21 Sept
4. Understanding specific challenges in Quality Management such as raw materials warehousing, measuring quality attributes, risk management and continuous improvement	23 Sept
5. Be able to name the fundamental principles of any quality management system and apply them in a biotechnology industry	28 Sept

ASSESSMENTS

	Assessment Task 1	Assessment Task 2	Assessment Task 3	Assessment Task 4
TYPE	Essay Assignment Operations Management	Essay Assignment Quality Management	GROUP SLIDE PRESENTATION	HANDOUT for POSTER DISPLAY
Weight	20	20	30	30
Due Dates	Fourth lecture date	Sixth lecture date	05 October	08 October
Submission	Email attachment to Prof Gyure	Email attachment to Prof Gyure	Email attachment to Prof Gyure	Email attachment to Prof Gyure

T1 ASSESSMENT

Essay Assignment – Operations Management (20% weight)

Individual

1. Pick a biotechnology industry and then a specific (can be hypothetical) company. Discuss an appropriate leadership style that you feel will be effective in managing the company's operations.
2. What raw materials does the company use and where do they get them? How are they supplied? Are they single sourced or are they purchased competitively on the open market?
3. Research the tenants of Good Warehousing Practice and offer some critique on how GWP might be put into practice in the company you selected above.
4. Total quality management (TQM) in the biotechnology industry is essential for gaining the edge in the market. Discuss some important features and their benefits. What are some obstacles that South African emerging companies may face in implementing TQM?
5. Write two or three paragraphs on what it means that "COVID-19 pandemic has disrupted supply chains using a few specific examples from your self-study research.
6. Write two or three paragraphs on how to best qualify for a job vacancy with the title "Operations Manager". Rate your own background and experience against these requirements.

RUBRIC (10 points maximum awarded per question)

1. **40% - MINIMUM SCORE**
2. **20% - RESPONSE ADDRESSES THE QUESTION**
3. **20% - RELEVANCE OF CONTENT**
4. **20% - EVIDENCE OF CRITICAL THINKING SKILLS**

T2 ASSESSMENT

Essay Assignment Quality Management (20% weight)

Individual

1. Differentiate between quality control and quality assurance. Provide some examples of activities in each.
2. Auditing in the biotechnology industry (any industry) is an important part of ensuring quality in manufacturing or processing. Summarize the skill set of the ideal auditor and measure your own competency in the various skills. Put forward a plan for self-improvement if appropriate.
3. Examine the P&L statement provided as a class handout. Consider the impact of sales lagging behind by six months and then only at levels 50% of what appear in the spreadsheet. Examine financial sustainability and profitability.
4. Describe the various tools we may use to monitor quality, i.e., mathematical tools that provide quantitative metrics related to quality that can be used to actively manage progress towards the quality objective.
5. Write a paragraph or two on the role that Quality Assurance plays in managing risk in manufacturing organizations. Include an example if you can.
6. A quantitative problem related to C_p C_{pk} . See Course Notes for Module04.

RUBRIC (10 points maximum awarded per question)

- 1. 40% - MINIMUM SCORE**
- 2. 20% - RESPONSE ADDRESSES THE QUESTION**
- 3. 20% - RELEVANCE OF CONTENT**
- 4. 20% - EVIDENCE OF CRITICAL THINKING SKILLS**

T3 ASSESSMENT
SLIDE PRESENTATION (30% weight)

Team Effort

Prepare a summary of what you feel are the important biotechnology operations and quality concepts presented in this class and uncovered in your self-study efforts as if you were preparing for an oral presentation. Use a slide format to summarize your information and in a format suitable for accompanying an oral presentation. Maximum 10 slides – you do not need to use Powerpoint or equivalent for your slides. Email your slides to GYURED@cput.ac.za.

RUBRIC (Total score is 100 points)

- 1. 20% - EVIDENCE OF TEAMWORK**
- 2. 40% - RELEVANT CONTENT DEMONSTRATES LEARNING**
- 3. 20% - SLIDES or HANDOUT QUALITY**
- 4. 20% - RELEVANCE TO BUILDING THE BIOECONOMY IN SOUTH AFRICA**

T4 ASSESSMENT
HANDOUT for POSTER DISPLAY (30% weight)

Team Effort

Pick a biotechnology company and prepare a 1-page handout showcasing what you believe to be some important aspects of their operations and quality management systems. Note that your audience is young entrepreneurs. The handout size is A4 but should the graphics, illustrations, format and layout should be prepared with an A2 size in mind. Follow the pointers given in the class notes – Module 06 and any examples that might be posted on Blackboard. Email your handout in print-ready format to Prof Gyure at GYURED@cput.ac.za.

RUBRIC (Total score is 100 points)

- 1. 50% - VISUAL FORMAT – COLOURS, FONT CLARITY AND APPROPRIATENESS**
- 2. 50% - RELEVANCE OF CONTENT**

Weekly Guide

<u>September and October, 2021</u>				
	PRINT MATERIAL	E - LEARNING Blackboard, U-Tube, other	F-2-F	ASSESSMENTS
<u>Module 1</u> 14 Sept	TEACHING Module 1 notes are available on Blackboard in advance of the lecture day. N.B. no print pack is available. Homework problems and self-study assignments are a part of the course notes.	TEACHING Pre-recorded audio lectures will be used in this Module LEARNING ACTIVITIES The T1 assessment in the next Module includes elements from Module 1 SELF STUDY – See Module 1 course notes	None planned	None yet assigned
<u>Module 2</u> 16 Sept	TEACHING Module 2 notes are available on Blackboard in advance of the lecture day. N.B. no print pack is available. Homework problems and self-study assignments are a part of the course notes.	TEACHING Pre-recorded audio lectures will be used in this Module LEARNING ACTIVITIES The T1 assessment in this Module includes elements from Module 1 and Module 2 SELF STUDY – See Module 2 course notes	Virtual Q&A scheduled for 16 Sept	The T1 Assessment is assigned in Module 2 and is due a week later.
<u>Module 3</u> 21 Sept	TEACHING Module 3 notes are available on Blackboard in advance of the lecture day. N.B. no print pack is available.	TEACHING Pre-recorded audio lectures will be used in this Module LEARNING ACTIVITIES	None planned	No new assignments

	Homework problems and self-study assignments are a part of the course notes.	The T2 assessment in the next Module includes elements from Module 3 SELF STUDY – See Module 3 course notes		
Module 4 23 Sept	TEACHING Module 4 notes are available on Blackboard in advance of the lecture day. N.B. no print pack is available. Homework problems and self-study assignments are a part of the course notes.	TEACHING Pre-recorded audio lectures will be used in this Module LEARNING ACTIVITIES The T2 assessment in this Module includes elements from Module 3 and Module 4 SELF STUDY – See Module 4 course notes	Virtual Q&A scheduled for 23 Sept	T1 Assessment due today. The T2 Assessment is assigned in Module 4 and is due a week later.
Holiday 24 Sept	University closed			
Module 5 28 Sept	TEACHING Module 5 notes are available on Blackboard in advance of the lecture day. N.B. no print pack is available. Homework problems and self-study assignments are a part of the course notes.	TEACHING Pre-recorded audio lectures will be used in this Module LEARNING ACTIVITIES The T3 assessment in this Module helps to summarize what they have learned SELF STUDY – See Module 5 course notes	None planned	The T3 Assessment is assigned in Module 5 and will be posted to Prof Gyure. Due date is 05 October
Module 6 30 Sept	TEACHING Course notes include amplification of what is expected in the T4 Assessment.	TEACHING In this Module 6 student teams will post summaries of the important points they learned as a part of the T3 Assessment.	Virtual Q&A scheduled for 30 Sept	T2 Assessment due today. The T4 Assessment is assigned in Module 6. Due date is 08 October.

		LEARNING ACTIVITIES T4 assessment in done in teams SELF STUDY None in Module 6.		