

**COURSE OUTLINES: BF3214 Commodities Trading**

<b>Academic Year</b>	2022/23	<b>Semester</b>	2
<b>Course Coordinator</b>	Sean Mulhearn		
<b>Course Code</b>	BF3214		
<b>Course Title</b>	Commodities Trading		
<b>Pre-requisites</b>	NIL		
<b>No of AUs</b>	2		
<b>Contact Hours</b>	26 hours		
<b>Proposal Date</b>	25 November 2022		
<b>A) Course Aims/Description</b>			
<p>This course aims to prepare you for a career in the global commodities markets by introducing you to global commodity market conventions, supply chains, risk management and investment techniques.</p> <p>It will also give you an understanding of the key industry participants and their role across the commodity supply chain. You will also gain valuable insight into market conventions, terminology and best practices in risk management.</p>			
<b>B) Intended Learning Outcomes (ILO)/Objectives</b>			
<p>Learning Outcomes/Objectives:</p> <p>By the end of this course, you should be able to:</p> <ol style="list-style-type: none"> <li>1. Articulate key global commodity market terminology and conventions.</li> <li>2. Identify and quantify financial risks associated with key participants across the commodity</li> <li>3. Define the importance of risk management and analyze basic risk management techniques</li> <li>4. Describe the various techniques to invest in commodities and how it adds value to an investment portfolio</li> </ol>			
<b>C) Course Content</b>			
<ul style="list-style-type: none"> <li>• Overview of global commodity markets and the importance of risk management</li> <li>• Characteristics, terminology, industry jargon and market conventions in global commodity markets</li> <li>• Discussion of the regulatory and competitive environment</li> <li>• Analysis of the commodity supply chain and how to identify and quantify key financial risks</li> <li>• Traditional and structured risk management highlighting industry best practices.</li> <li>• How to invest in commodities and capitalize on market volatility</li> <li>• Practical case studies highlighting Asian companies and exposures.</li> </ul>			

**D) Assessment (includes both continuous and summative assessment)**

Component	ILO Tested	NBS Learning Goal (Refer to Appendix 1 for list)	Weightage	# Team/Individual	Assessment Rubrics (attach rubrics in appendix)
1. Seminar participation	1-4	<b>Oral Communication</b>	10%	Individual	Class Participation
2. *Group case study and presentation	1-4	<b>Problem Solving &amp; Decision Making Oral Communication</b>	50%	Team (25%)  Individual (25%)	- Problem Solving and Decision Making (Group) - Oral Communication - Compulsory Peer Evaluation Form
3. Quiz 1	1-4	<b>Problem Solving &amp; Decision Making</b>	20%	Individual	N.A
4. Quiz 2	1-4	<b>Problem Solving &amp; Decision Making</b>	20%	Individual	N.A
Total			100%		

**Important Notes:****\*Group Case Study**

Total weightage is 50% split into 2 components- Group Grade (25%) and Individual (25%)

Every member is required to present.

Groups and individuals will be judged on several measures:

- Identification of risks
- Sensitivity analysis of risks- i.e. the impact of changing prices
- Analysis of various risk management alternatives
- Clarity ideas
- Presentation skills

Students will be expected to complete a compulsory peer evaluation. Group marks will be adjusted based on the feedback and rating provided by their peers.

**E) Formative feedback**

- Feedback will be given in terms of scores for each quiz, identifying common mistakes and provide guidance that strengthens your understanding of the topics.
- Team assignments are another indicator of how each of you are progressing through the course. Feedback will be provided on your findings and ideas, and soft skills (e.g. negotiation abilities, presentation skills)

**F) Learning and Teaching approach**

Approach	How does this approach support students in achieving the learning outcomes?
Seminars on Basics	Seminars on Global Commodities markets, focusing on identifying and managing risk across the Commodity Supply Chain aim for students to acquire the BASICS and fundamentals involved.
Seminars on Application	Real-life and practical dynamics would be the focus, establishing the foundations required for further exploration. Application of basics in real life situations via case studies and testing the students on their appreciation of basics and their applications.
Extra Consultations	Enhancement of the core knowledge acquired in the seminars, allowing for resolution of issues and further in-depth development.

Approach	How does this approach support students in achieving the learning outcomes?
Performance	This provides opportunities for students to apply what they have learnt in class into practice in an authentic setting, with aim for assessing their progress.
Individual Quizzes	Individual Quizzes specific topics to assess appreciation of basics
In-Class activities and Group assignment	Group Assignments providing opportunities to develop teamwork on application to more complex real-life issues involved in global trading

**G) Reading and References**

- There is no text book for this course.
- References and relevant articles to be posted on course website
- Students will have to do their own research. Guidance will be provided whenever required.
- Slides will be provided for all seminars.

**H) Course Policies and Student Responsibilities****(1) General**

Students are expected to complete all assigned pre-class readings and activities, attend all seminar classes punctually and take all scheduled assignments and tests by due dates. Students are expected to take responsibility to follow up with course notes, assignments and course related announcements for seminar sessions they have missed. Students are expected to participate in all seminar discussions and activities.

**(2) Absenteeism**

Requires you to be in class to contribute to team work. In-class activities make up a significant portion of your course grade. Absence from class without a valid reason will affect your overall course grade. Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

If you miss a seminar session, you must inform your team members and me via email (include email address) prior to the start of the class

**(3) Quiz and Assignments**

You are required to submit any quizzes and assignments by the due dates.

**I) Academic Integrity**

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [academic integrity website](#) for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

<b>J) Course Instructors</b>				
<b>Instructor</b>	<b>Office Location</b>	<b>Phone</b>	<b>Email</b>	<b>Consultation Hours</b>
Sean Mulhearn	NA	9023 7146 or +61 414 876 646	<a href="mailto:sean@jacarandacp.com">sean@jacarandacp.com</a>	<a href="#">By request</a>
<b>K) Planned Weekly Schedule</b>				
<b>Week</b>	<b>Topic</b>	<b>ILO</b>	<b>Readings/ Activities</b>	
1	Introduction to Commodity Markets Elements of Trading Energy Markets	1-4	As per G above	
4	Bulks and Agri Precious and Base Bloomberg and Reuters	1-4	As per G above	
5	Industry Case Study Group Exercise Quiz 1	1-4	As per G above	
	Recess Week			
8	Investing in Commodities Structures Solutions Risk and Controls	1-4	As per G above	
13	Group Case Study Wrap up	1-4	As per G above	
	<b>END OF SEMESTER</b>			

## Problem Solving and Decision-Making Rubric

Traits	Performance									
	Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed									
	Not Yet					Substantially Developed				
<b>Define the Problem</b>	Does not identify the problem clearly; demonstrates limited understanding of the problem or related contextual factors.					Identifies the problem clearly and thoroughly; demonstrates the ability to construct a clear and insightful problem statement with evidence of all relevant contextual factors.				
<b>Devise Strategies to Solve the Problem</b>	Selects a strategy without regard to fit; does not demonstrate the ability to consider new strategies even if his/her approach is clearly not appropriate; identifies alternatives that reflect limited understanding of the situation.					Identifies multiple strategies for solving the problem that apply within a specific context; demonstrates the ability to invert a process to form a plan and clearly articulates his/her decision making process; identifies alternatives that reflect an in depth understanding of the situation.				
<b>Assess implementation feasibility</b>	Does not examine how well the stakeholders/ beneficiaries are involved and not able to identify areas of risk and possible side-effects. Does not specify how the implementation will be monitored and controlled. No indicators or instruments to review or analyze the success of the action.					Clearly assess how well the stakeholders/ beneficiaries are involved; considers areas of risk and provides insights in addressing possible side-effects. Able to state how the implementation will be monitored effectively; identifies the stages at which progress should be measured and specify what results are expected to have been achieved at these stages.				
<b>Evaluate Outcomes</b>	Reviews results superficially in terms of the problem defined with no consideration of need for further work.					Reviews results relative to the problem defined with thorough, specific considerations of need for further work.				

## Communication Rubric (Oral)

Traits		Performance	
		Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed	
		Not Yet	Substantially Developed
<b>Communication Outcome</b>	<ul style="list-style-type: none"> <li>Has a clear message for audience</li> <li>Maximizes likelihood of audience accepting the message</li> </ul>	Central message is not explicitly stated in the presentation. Main points are not clearly identified, audience unsure of the direction of the message.	Central message is precisely stated; main points are clearly identified.
<b>Situational Factors</b>	<ul style="list-style-type: none"> <li>Addresses audience needs</li> <li>Builds rapport with audience</li> </ul>	Topic is irrelevant to audience needs and interest. No attempt made to connect topic to audience.	Connection of topic to audience needs and interest is stated with sophistication. Identifies and expresses a deep understanding of the target audience.
<b>Design Factors</b>	<b>Content</b> <ul style="list-style-type: none"> <li>Presents relevant information</li> <li>Supports main points with strong evidence</li> </ul>	Content is erroneous or irrelevant; references and supporting materials are absent. Lacks of depth in content and little insights are exhibited. Presentation falls outside set time parameters.	Content is accurate, thorough, and directly on point; strong support and references are provided. Exhibits depth and insight in content. Effective use of time and stays within time parameters.
	<b>Structure</b> <ul style="list-style-type: none"> <li>Organises content coherently</li> <li>Signals transitions between points</li> </ul>	Organizational pattern (specific introduction and conclusion, sequenced materials within the body, and transitions) is not observable.	Organizational pattern is clearly and consistently observable and makes the content of the presentation cohesive.
	<b>Verbal</b> <ul style="list-style-type: none"> <li>Speaks at appropriate speed and volume</li> <li>Uses correct grammar and pronunciation</li> </ul>	Grammar, pronunciation and word choice are deficient. Vocal delivery is too soft or too fast to understand; gap-fillers interfere with expression.	Free of errors in grammar and pronunciation; good choices of word enhance clarity of expression. Vocal delivery is varied and dynamic. Speech rate, volume, and tone facilitate audience comprehension. Minimal gap fillers.
	<b>Non-Verbal</b> <ul style="list-style-type: none"> <li>Establishes eye contact</li> <li>Uses gestures and movement to convey energy and confidence</li> </ul>	Eye contact, posture, gestures, movement and facial expressions are inappropriate and significantly distracting.	Eye contact, posture, gestures, movement and facial expressions make the presentation compelling, and speaker appears polished and confident.

**CONFIDENTIAL PEER EVALUATION FORM FOR TEAM PROJECT**

Member's name: \_\_\_\_\_

Seminar group and team number: \_\_\_\_\_

Please use the attached Peer Evaluation Rubric to evaluate yourself and your team members on each of the 5 stated attributes (on a scale of 1 to 7). State your ratings for yourself and each of your team members in the table below. For your self-assessment, insert "(Self)" after your name in the table below.

Index #	Name of team members	1 - RR	2 - CM	3 - CR	4 - CT	5 - RS	Average Rating
1							
2							
3							
4							
5							
6							

If any of your ratings above is < 4, please provide a brief explanation to justify the ratings.

Index #	Brief explanation to justify a rating of < 4

*You may attach supporting documents (like emails and screen shots), if any, to support your explanations above.*



**Teamwork & Interpersonal Skills (Peer Evaluation) Rubric****Learning Objective: The ability to work effectively with others in a group setting.**

Traits	Performance	
<b><u>1. Roles and Responsibility (RR)</u></b> Behaves professionally by upholding responsibility and assuming accountability for self and others in progressing towards the team's goal.	<b>Scant</b> Unclear about his/her own role; refuses to take a role in the group; insists to work individually and has limited coordination or communication with others.	<b>Substantially Developed</b> Always fulfills responsibilities; performs his/her role within the group with enthusiasm and demonstrates willingness to work collaboratively.
<b>Evaluation: Scant <u>1 2 3 4 5 6 7</u> Substantially Developed</b>		
<b><u>2. Communication (CM)</u></b> Identifies appropriate mechanisms to coordinate and correspond with team members.	<b>Scant</b> Modes of communication are not appropriate, causing confusion and miscommunication among team members.	<b>Substantially Developed</b> Modes of communication are appropriate, and maintaining timely communication and correspondence with team members.
<b>Evaluation: Scant <u>1 2 3 4 5 6 7</u> Substantially Developed</b>		
<b><u>3. Conflict Resolution (CR)</u></b> Resolves conflicts using a variety of approaches.	<b>Scant</b> Does not recognize conflicts or is unwilling to resolve conflicts.	<b>Substantially Developed</b> Consistently resolves conflicts through facilitating open discussion and compromise.
<b>Evaluation: Scant <u>1 2 3 4 5 6 7</u> Substantially Developed</b>		
<b><u>4. Contributions (CT)</u></b> Contributes positive input for the team; effectively utilizes one's knowledge and expertise.	<b>Scant</b> Largely disinterested in working in a group and refuses to participate; observes passively or is unwilling to share information with other team members.	<b>Substantially Developed</b> <u>Actively attends and participates in all activities and provides meaningful contribution in articulating ideas and opinions.</u>
<b>Evaluation: Scant <u>1 2 3 4 5 6 7</u> Substantially Developed</b>		
<b><u>5. Relationship (RS)</u></b> Maintains cooperative interaction with other team members regardless of individual /cultural differences and respects diverse perspectives.	<b>Scant</b> Rarely listens to others and does not acknowledge the opinions that differ from his/her own.	<b>Substantially Developed</b> Engages in respectful relationships with all other members in the team. Embraces and accepts diverse points of view without prejudice.
<b>Evaluation: Scant <u>1 2 3 4 5 6 7</u> Substantially Developed</b>		

**References:** *Teamwork Value Rubric - Association of American Colleges and Universities.* Retrieved from <http://www.aacu.org/value/rubrics/pdf/teamwork.pdf>

**List of NBS Learning Goals**

LEARNING GOAL	LEARNING OBJECTIVE	CHECK
<b>TASK SKILLS</b>		
Acquisition of Knowledge	<i>Instructors, please define.</i>	<input type="checkbox"/>
Ethical Reasoning	The ability to recognize and understand ethical issues, and apply sound ethical reasoning.	<input type="checkbox"/>
Critical Thinking & Creative Thinking	The ability to define, examine, evaluate, analyze and synthesize various arguments and knowledge to form independent judgment.	<input type="checkbox"/>
	The ability to provide insight in an innovative way characterized by high degree of adaptiveness.	<input type="checkbox"/>
Problem Solving & Decision Making	The ability to identify problem, generate a plan to solve problem, implement and evaluate the plan and make sound business decision.	<b>X</b>
Planning & Execution	The ability to set clear priorities and plans of action for the task and define task objectives to fulfill goals within a planned schedule for execution.	<input type="checkbox"/>
<b>PEOPLE SKILLS</b>		
Oral Communication & Written Communication	The ability to communicate well with others verbally so that it clearly expresses the intended message and is understandable and useful to the receiving party.	<b>X</b>
	The ability to communicate well with others in writing so that it clearly expresses the intended message and is understandable and useful to the receiving party.	<input type="checkbox"/>
Negotiation	The ability to systematically plan and prepare for negotiation and apply negotiation skills in personal and professional practice.	<input type="checkbox"/>
Cultural Intelligence	The ability to function effectively in situations characterized by cultural diversity.	<input type="checkbox"/>
Teamwork & Interpersonal Skills	The ability to work effectively with others in a group setting.	<b>X</b>
Motivation & Development of Self & Others	The ability to develop a better understanding of one's strengths and weaknesses, and learn to view others and mistakes positively as sources of personal and professional development.	<input type="checkbox"/>

Please write to NBS Accreditation office ([nbsaccro@ntu.edu.sg](mailto:nbsaccro@ntu.edu.sg)) for sample rubrics.

**Annex C****Current Course Outline (applicable only when submission is made under Sections C to J)**

**NANYANG TECHNOLOGICAL UNIVERSITY NANYANG BUSINESS  
SCHOOL**

**BF3214**

COMMODITIES TRADING

<b>Academic Year</b>	: 2019/20	<b>Semester</b>	: 2
<b>Pre-requisites</b>	: Nil		
<b>No. of AUs</b>	: 2 AUs		

**Course Description and Scope**

This course aims to prepare you for a career in the global commodities markets by introducing you to global commodity market conventions, supply chains, risk management and investment techniques.

It will also give you an understanding of the key industry participants and their role across the commodity supply chain. You will also gain valuable insight into market conventions, terminology and best practices in risk management.

**This course encompasses following salient segments on global commodity trading:****Course Learning Objectives**

Articulate key global commodity market terminology and conventions.

Identify and quantify financial risks associated with key participants across the commodity

Define the importance of risk management and analyze basic risk management techniques

Describe the various techniques to invest in commodities and how it adds value to an investment portfolio

**Learning Outcome****Learning & Teaching Methods**

Seminars: 26 hours; 13 weeks; 2 hours per week.

## Course Assessments

Components	Marks	Individual/Group
(1) Seminar participation	10	Individual
(2) *Group case study and presentation	50	Individual & Group
(3) Quiz 1	20	Individual
(4) Quiz 2	20	Individual
<b>Total</b>	<b>100</b>	

## Assessment Plan

Learning Goals <sup>1</sup>	Course Learning Objective <sup>2</sup>	Assessment Method <sup>3</sup> (For each learning goal, briefly describe the assignment(s) to be used for assessing the achievement of the stated objectives)	NBS Standard Rubrics <sup>4</sup> (For each learning goal, state the actual rubric to be used for grading the assignment(s) described)
Acquisition of Knowledge			
Ethical Reasoning	The ability to recognize and understand ethical issues, and apply sound ethical reasoning.		
Critical Thinking & Creative Thinking	<ul style="list-style-type: none"> <li>The ability to define, examine, evaluate, analyze and synthesize various arguments and knowledge to form independent judgment.</li> </ul>		

	<ul style="list-style-type: none"> <li>• The ability to provide insight in an innovative way characterized by high degree of adaptiveness.</li> </ul>		
<b>Problem Solving &amp; Decision Making</b>	The ability to identify problem, generate a plan to solve problem, implement and evaluate the plan and make sound business decision.		
<b>Planning &amp; Execution</b>	The ability to set clear priorities and plans of action for the task and define task objectives to fulfill goals within a planned schedule for execution.		
<b>Oral Communication &amp; Written Communication</b>	<ul style="list-style-type: none"> <li>• The ability to communicate well with others verbally so that it clearly expresses the intended message and is understandable and useful to the receiving party.</li> <li>• The ability to communicate well with others in writing so that it clearly expresses the intended message and is understandable and useful to the receiving party.</li> </ul>		
<b>Negotiation</b>	The ability to systematically plan and prepare for negotiation and apply negotiation skills in personal and		

	professional practice.		
<b>Cultural Intelligence</b>	The ability to function effectively in situations characterized by cultural diversity.		
<b>Teamwork &amp; Interpersonal Skills</b>	The ability to work effectively with others in a group setting.		
<b>Motivation &amp; Development of Self &amp; Others</b>	The ability to develop a better understanding of one's strengths and weaknesses, and learn to view others and mistakes positively as sources of personal and professional development.		

## Further description of each assessment component

### <sup>1</sup>NBS learning goals

Acquisition of Knowledge | Ethical Reasoning | Critical Thinking | Creative Thinking | Problem Solving & Decision Making | Planning & Execution | Oral Communication | Written Communication | Negotiation | Cultural Intelligence | Teamwork & Interpersonal Skills | Motivation & Development of Self & Others

### <sup>2</sup>Course Learning Objectives

Related to the expected learning goal(s) | Are observable and measurable

### <sup>3</sup>Assessment Method

Assignments specially designed to assess students' achievement of the stated objectives, e.g., the use of an article critique for assessing critical thinking skills, an analysis of a dilemma for assessing ethical reasoning, etc.

### <sup>4</sup>NBS Standard Rubrics

Criteria in rubrics must relate closely to the stated objectives | Strongly encouraged to use the NBS standard rubrics, and you may add on other criteria relevant to your assessment | NBS Office of Accreditation (AO) can assist you with rubrics that are aligned to the NBS learning goals<sup>1</sup>

## Readings and References

- a. Oil 101-Morgan Downey 1<sup>st</sup> Edition 2009
- b. Trafigura Publications:
  - i. Economics of Commodity Trading Firms
  - ii. Commodities Demystified
- c. Journal of Portfolio Management- Commodity Investing-Spring 2016
- d. Websites from major futures exchanges- CME, ICE and SGX on products & contracts,
- e. Platts.com website on latest methodologies and specification
- f. Others- to be provided during the course and lodges on course website

## Other Resources

**Nil**

## Course Instructor

Instructor	Office Location	Phone	Email
Sean Mulhearn #		9023 7146 or +61 414 876 646	<a href="mailto:sean@jacarandacp.com">sean@jacarandacp.com</a>

**Please indicate # for course coordinator**

## Proposed Weekly Schedule

Week	Topic	Course LO	Readings/Activities
1	<b>Introduction</b> <ul style="list-style-type: none"> <li>• Overview of Course</li> <li>• Assessments &amp; Evaluation</li> <li>• Global commodity markets</li> <li>• Importance of Risk Management</li> <li>• Factors impacting prices</li> <li>• Regulatory and competitive environment</li> <li>• Characteristics and conventions</li> </ul>	1-4	As per G above
1	<b>Establishing Risk and Trading</b> <ul style="list-style-type: none"> <li>• Introduction to supply chain</li> <li>• Structural considerations</li> </ul>	1-4	As per G above



	<ul style="list-style-type: none"> <li>Trading strategies</li> </ul>		
1	<b>Energy Markets</b> <ul style="list-style-type: none"> <li>Crude oil and refined products</li> <li>Gas &amp; LNG</li> <li>Physical trading techniques</li> <li>Price discovery and data</li> </ul>	1-4	As per G above
4	<b>Bulks and Agriculture</b> <ul style="list-style-type: none"> <li>Agriculture</li> <li>Coal</li> <li>Iron Ore</li> <li>New markets &amp; benchmarks</li> <li>Accessing data via Bloomberg &amp; Reuters</li> </ul>	1-4	As per G above
4	<b>Precious and Base metals- guest speaker</b> <ul style="list-style-type: none"> <li>Gold market- physical, futures, and physical</li> <li>Base metals</li> <li>Role of LME</li> <li>Regional exchanges</li> <li>Trading strategies</li> </ul>	1-4	As per G above  Quiz on sections 1-5
4	<b>Supply Chain Analysis</b> <ul style="list-style-type: none"> <li>Identifying &amp; quantifying risks across the supply chain</li> <li>Developing risk management framework</li> <li>Basis risk</li> <li>Group exercise</li> </ul>	1-4	As per G above
4	<b>Risk Management</b> <ul style="list-style-type: none"> <li>Traditional risk techniques</li> <li>Physical</li> <li>Futures</li> <li>Over the Counter (OTC) <ul style="list-style-type: none"> <li>Swaps</li> <li>Options- puts, calls, collars, 3 ways</li> </ul> </li> <li>Practical case study</li> </ul>	1-4	As per G above
5	<ul style="list-style-type: none"> <li><b>Industry Case Study-Aviation</b></li> <li>Market Update</li> <li>Risk analysis of aviation industry</li> </ul>	1-4	As per G above
	Recess Week		
8	<ul style="list-style-type: none"> <li><b>Investing in commodities</b></li> <li>Review of alternative investment strategies</li> <li>Equities, ETF, Futures</li> </ul>	1-4	As per G above  Quiz on sections 6-9
8	<ul style="list-style-type: none"> <li><b>Structured Solutions &amp; Commodity Finance</b></li> <li>Structured derivatives</li> <li>Production payment</li> <li>Inventory finance</li> </ul>	1-4	As per G above
8	<ul style="list-style-type: none"> <li><b>Risks and Controls</b></li> <li>Key risk factors</li> </ul>	1-4	As per G above

	<ul style="list-style-type: none"><li>• Overview of previous commodity losses</li><li>• Analysis of lessons learnt</li></ul>		
13	<ul style="list-style-type: none"><li>• <b>Group Presentations</b></li><li>• Case studies presentations</li></ul>	1-4	As per G above
13	<b>Summary and review</b>		

## Appendix 1: Taxonomy for Learning Outcomes/Objectives

Action Words for Bloom's Taxonomy					
Knowledge	Understand	Apply	Analyze	Evaluate	Create
define	explain	solve	analyze	reframe	design
identify	describe	apply	compare	criticize	compose
describe	interpret	illustrate	classify	evaluate	create
label	paraphrase	modify	contrast	order	plan
list	summarize	use	distinguish	appraise	combine
name	classify	calculate	infer	judge	formulate
state	compare	change	separate	support	invent
match	differentiate	choose	explain	compare	hypothesize
recognize	discuss	demonstrate	select	decide	substitute
select	distinguish	discover	categorize	discriminate	write
examine	extend	experiment	connect	recommend	compile
locate	predict	relate	differentiate	summarize	construct
memorize	associate	show	discriminate	assess	develop
quote	contrast	sketch	divide	choose	generalize
recall	convert	complete	order	convince	integrate
reproduce	demonstrate	construct	point out	defend	modify
tabulate	estimate	dramatize	prioritize	estimate	organize
tell	express	interpret	subdivide	find errors	prepare
copy	identify	manipulate	survey	grade	produce
discover	indicate	paint	advertise	measure	rearrange
duplicate	infer	prepare	appraise	predict	rewrite
enumerate	relate	produce	break down	rank	role-play
listen	restate	report	calculate	score	adapt
observe	select	teach	conclude	select	anticipate
omit	translate	act	correlate	test	arrange
read	ask	administer	criticize	argue	assemble
recite	cite	articulate	deduce	conclude	choose
record	discover	chart	devise	consider	collaborate
repeat	generalize	collect	diagram	critique	collect
retell	give examples	compute	dissect	debate	devise
visualize	group	determine	estimate	distinguish	express
	illustrate	develop	evaluate	editorialize	facilitate
	judge	employ	experiment	justify	imagine
	observe	establish	focus	persuade	infer
	order	examine	illustrate	rate	intervene
	report	explain	organize	weigh	justify
	represent	interview	outline		make
	research	judge	plan		manage
	review	list	question		negotiate
	rewrite	operate	test		originate
	show	practice			propose
	trace	predict			reorganize
	transform	record			report
		schedule			revise
		simulate			schematize
		transfer			simulate
		write			solve
					speculate
					structure
					support
					test
					validate