



SBM1206 Advanced Risk and Uncertainty Management (guiding project/program management)

UOS CODE SBM1206	UOS NAME Advanced Risk and Uncertainty Management			CREDIT POINTS 6	STATUS Advanced
SUMMARY	<p>As advocated in typical published literature and textbooks or Standards, risk management starts after a baseline design and plan has been prepared for the project/program. Its purpose is to mitigate risks that pose threats to the achievement of the base plan. This practice tends to lead to sub-optimal outcomes as all that is done is to smooth the path to achieve the base plan.</p> <p>True risk management approach needs to challenge the base plan and treat it as a starting point. The project participants need to radically challenge the project business case, project assumptions, its implementation strategy and other key components. They need to come up with solutions that can enhance the project value and reduce its exposure to risks. This is a creative process; it requires setting stretched targets for the project and then deriving breakthrough solutions.</p> <p>This unit of study addresses the following:</p> <ul style="list-style-type: none"> • Typical classes of risks and uncertainties on projects and business ventures; • Quantitative risk and scenario analysis at the time of conceptualisation to establish the viability and develop sound strategies to conceptual development and implementation plans; • Analysis of market risks through cost competitiveness concepts; • Implementation risks, comprising project completion (schedule) and cost estimate risks; and • Holistic project risk management employing integrated teams. 				
COURSE CONVENOR COURSE TUTOR	Professor A Jaafari, ME, MSc, PhD, FIEAust, CPEng TBA				
ASSUMED KNOWLEDGE	PM4001				
APPROXIMATE WORKLOAD	Lectures & Workshops	Team Work	Personal Work	Readings	
	>30 hours	>30 hours	>50 hours	>30 hours	
PRE-REQUISITE (course name)	SBM1202 recommended.				
OBJECTIVES	<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> • Gain a thorough understanding of the concepts of advanced risks and uncertainty modelling, analysis, interpretation and application on all project phases but with particular emphasis on the front-end of projects and programs where uncertainty is the highest; • Develop competency in the systematic analysis of risks and uncertainties on projects and programs in a variety of projects and programs, such as R&D, IT/IS, product development (from an economic and managerial perspective), industrial and construction projects and urban renewal programs; • Know how to apply computer-based simulation and quantify the risks and uncertainties on projects and programs; • Design and apply risk response strategies and assess their effectiveness; and • Understand the dynamic nature of risks and uncertainties thus learn how to develop and apply continuous monitoring, re-appraisal and realignment of project/program plans and strategies. 				
TARGET COMPETENCIES (Project and Program Management))	<p>Target competencies in this unit of study comprise the following:</p> <p>Designing the risk Management framework and approach</p> <ul style="list-style-type: none"> • Ability to design and implement an integrated project planning & risk management framework, defining relevant processes, tools, information needs and stages <p>Identifying & classifying risks</p> <ul style="list-style-type: none"> • Ability to define & identify risks & opportunities that threaten or assist the project to achieve its multiple objectives • Ability to classify risks, e.g. financial, technical, implementation, external etc. incl. 				



	<p>investigation of interrelationship and ability to relate these to project environment, project objectives, host and performing organisations' capabilities, statutory requirements and stakeholders' needs</p> <p>Acquiring data and evaluating risks</p> <ul style="list-style-type: none"> • Ability to gather data on all significant risks & opportunities, incl. corroboration, validation, consolidation, formatting and compilation for future references, also researching the complex interactions of various risk factors • Ability to evaluate the impacts of risk & opportunity factors individually & collectively, classify into minor, moderate & major, also determine those that can & should be quantified, those that need qualitative analysis <p>Quantifying and interpreting risks</p> <ul style="list-style-type: none"> • Ability to quantify major risks through construction of appropriate models, testing & validation of the same, inputting of data and derivation of results for the project objective functions under consideration (e.g. Financial Ratios, IRR, NPV/C, TLCC, Duration, Cost) • Ability to explain the results obtained from risk quantification, incl. interpreting means, characteristic values, confidence intervals etc. as well as their sensitivity to input factors & assumptions used in each scenario <p>Planning and implementing response</p> <ul style="list-style-type: none"> • Ability to develop and implement risk response plans incl. re-engineering of the whole project/program <p>Monitoring risks and readjusting project plans</p> <ul style="list-style-type: none"> • Ability to monitor how risks/opportunities unfold in the light of changes in external & internal environments, monitor performance of project plans & highlight areas of concern • Ability to identify significant deviations, forecast consequences if unchecked, engage stakeholders in action, re-adjust project strategies/ plans & apply corrective actions • Maintenance of accurate records & continuous analysis of impacts, involvement of key decision makers and obtaining of agreements <p>Managing knowledge</p> <ul style="list-style-type: none"> • Ability to capture knowledge gained from risk management practices, reflect the lessons learnt from both successes & failures in the new projects (modify risk management approaches accordingly), innovate & add to the stock of knowledge in this field
<p>TARGET COMPETENCIES <i>(Personal and Socio-cultural)</i></p>	<ul style="list-style-type: none"> • Generic: All competencies that are common to all professionals (including cognitive and communication abilities, problem solving and analytical mindset) • Leadership: Ability to direct, motivate & manage individuals & teams. • Commitment: Ability to dedicate to tasks & to project outcomes. • Attitude: Ability to create the right frame of mind that promotes integrity & support for achievement of project goals within a social context. • Self Direction: Ability to manage within and without guidelines & processes, and to work without supervision. • Learning: Ability to commit to continuous improvement in knowledge, skills & attitude, & to creating new knowledge developing skills & approaches. • Cultural Empathy: Ability to respect for & accommodation of individual lifestyle, beliefs & norms. • Creativity & Innovation: Capacity to generate new ideas/approaches & make them happen.
<p>MODES OF DELIVERY</p>	<ul style="list-style-type: none"> • Upfront intensive workshop (4 days) • Project and team based flexible work facilitated via the Internet (over 10 weeks) • Face-to-face formal assessment (one week)
<p>ASSESSMENT</p>	<ol style="list-style-type: none"> 1. Formal knowledge test 2. Team project submissions (formatted as per specification for the same) 3. Formal PM competency assessment 4. Formal Leadership & Socio-cultural competency assessment



	<i>PRESCRIBED FOR THE COURSE</i>	<i>SELECTED REFERENCES</i>
PRINTED MATERIALS	Extensive lectures notes, published papers, case study material and other information will be provided on-line as part of this course unit.	<p>As advised on module web site (the following is only a sample of references)</p> <p>Jaafari, A. (2004). Modelling Complex Projects. Chapter 13 in The Wiley Guide to Managing Projects. Pinto and Morris (eds). John Wiley & Sons. www.wiley.com</p> <p>Vose, D. (2000). Risk Analysis: A Quantitative Guide. John Wiley & Sons. 2nd Edition.</p> <p>Jaafari, A. (2001). Management of Risks, Uncertainties and Opportunities on Projects: Time for a Fundamental Shift. <i>International Journal of Project Management</i>.</p> <p>AS/NZS 4360 (1999), Risk management.</p> <p>Perkins F. 1994, Practical Cost Benefit Analysis: Basic Concepts and Applications. MacMillan Education Australia Pty Ltd, Melbourne.</p> <p>Pouliquen L.Y. 1970, Risk Analysis in Project Appraisal, World Bank Staff Occasional Papers No. 11, John Hopkins Press, Baltimore.</p> <p>Turner J.R. 1999, The handbook of project-based management, McGraw Hill, Berkshire, UK.</p> <p>RAMP (1998): Risk Analysis and Management for Projects. The Institution of Civil Engineers and the Faculty and Institute of Actuaries. <i>Thomas Telford Publishing</i>.</p>
WEB SITES	No single Web site presents all the necessary knowledge that students need to learn and apply. However, opposite are some useful sites to visit.	<p>Online useful sources of references are:</p> <p>http://www.ogc.gov.uk/sdtoolkit/keyissues/index.html</p> <p>http://www.mcmullan.net/eclj/BOT.html</p> <p>http://www.spsr.ucla.edu/dup/courses/s99/289S99.html</p> <p>http://www.decisioneering.com/support/whitepaper/lorance.html</p>
Software	N.A.	<p>Participants may wish to access and use commercially available software such as @Risk or equivalent as well as normal spreadsheets.</p> <p>[http://www.duxbury.com]</p> <p>[http://www.palisade.com]</p>
COURSE CONTENTS	<p>Intensive Phase</p> <p>Day 1</p> <ul style="list-style-type: none"> • Introduction to course aims, objectives, target competencies, learning strategies, resources available, timetable and deliverables, assessment methods and related briefings • Briefing on how to conduct the entire unit of study • Lecture: Project (client)'s on risk and uncertainty management • Groupwork on project (client)'s risk and uncertainty management <p>Day 2</p> <ul style="list-style-type: none"> • Lecture: Contractor's perspective on risk and uncertainty management • Groupwork on contractor's perspective on risk and uncertainty management 	



	<p>Day 3</p> <ul style="list-style-type: none"> • Lecture: Current best practice approach to risk and uncertainty management • Groupwork on current best practice approaches to risk and uncertainty management • Lecture: Advanced concepts of risk and uncertainty management • Groupwork on advanced concepts of risk and uncertainty management <p>Day 4</p> <ul style="list-style-type: none"> • Revision and preparation for test • Reinforcing learning outcomes and application of the same to forthcoming team project • Conduct of written test on risks and uncertainty management on projects and programs • Students' feedback on the intensive phase 																				
	<p>Teamwork phase</p> <p>A structured learning program will be applied; in summary form it will comprise:</p> <ul style="list-style-type: none"> • An overall process for studying advanced concepts of project/program risk and uncertainty management, and applying the same to each phase of a real life case project as advised in the unit's web site; • A program of the learning activities which are part of student's Team Workplan and individual competency acquisition needs which is to be conducted within the unit of study Schedule as advised in the unit's web site (detailed schedules are to be developed and submitted as part of each Team's Work/QA Plan) • The assignment Brief which is available as a downloadable file. <p>The Learning activities are designed for each team to develop and evaluate a complete risk and uncertainty strategies and management plan * for their case project via the following activities:</p> <table border="1"> <tr> <td colspan="5" style="text-align: center;">Assessment of learning styles and team roles, and balancing of team development of self management and socio-cultural/teamwork competencies</td> </tr> <tr> <td style="text-align: center;">Team Formation, Case Project selection and team QA/Workplan</td> <td style="text-align: center;">Activity 1 Best Practice Models vs. Case Project Requirements</td> <td style="text-align: center;">Activity 2 Strategy for Risk and Uncertainty Management of Case Project</td> <td style="text-align: center;">Activity 3 Detailed Plan for Risk and Uncertainty Management of Case Project</td> <td style="text-align: center;">Activity 4 Evaluation, Formatting and Presentation of Project Report</td> </tr> <tr> <td style="text-align: center;">Case Project Summary, QA/Workplan</td> <td style="text-align: center;">Submit Assignment 1</td> <td style="text-align: center;">Submit Assignment 2</td> <td style="text-align: center;">Submit Assignment 3</td> <td style="text-align: center;">Submit Assignment 4</td> </tr> <tr> <td colspan="5" style="text-align: center;">Continuous reflection, self and peer assessment and competency acquisition. Final Individual Report and Viva to validate competencies acquired versus target competencies</td> </tr> </table> <p>*. The plan must address the risks and uncertainties perceived to impact the project/program's strategic/business goals as well as its implementation strategies. The risk management strategies recommended should be such so as to underpin the managerial strategies of each phase of the case project/program.</p>	Assessment of learning styles and team roles, and balancing of team development of self management and socio-cultural/teamwork competencies					Team Formation, Case Project selection and team QA/Workplan	Activity 1 Best Practice Models vs. Case Project Requirements	Activity 2 Strategy for Risk and Uncertainty Management of Case Project	Activity 3 Detailed Plan for Risk and Uncertainty Management of Case Project	Activity 4 Evaluation, Formatting and Presentation of Project Report	Case Project Summary, QA/Workplan	Submit Assignment 1	Submit Assignment 2	Submit Assignment 3	Submit Assignment 4	Continuous reflection, self and peer assessment and competency acquisition. Final Individual Report and Viva to validate competencies acquired versus target competencies				
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<p>COMPETENCY VALIDATION (via evidence and professional interview)</p>	<p>Final Report & assessment</p> <p>Each student must plan to progressively acquire, develop and document target managerial and personal /socio-cultural competencies. The protocols on the web site for this purpose need to be followed carefully to prepare the required evidence of competency acquisition. The evidence for this unit to comprise a final report in two parts to validate individually the following: Specified target competencies and Personal and Socio-cultural competencies. These will be assessed separately and both need to show the student's development history using the student's L&D plan and the competencies gained previously as the starting point.</p>																				