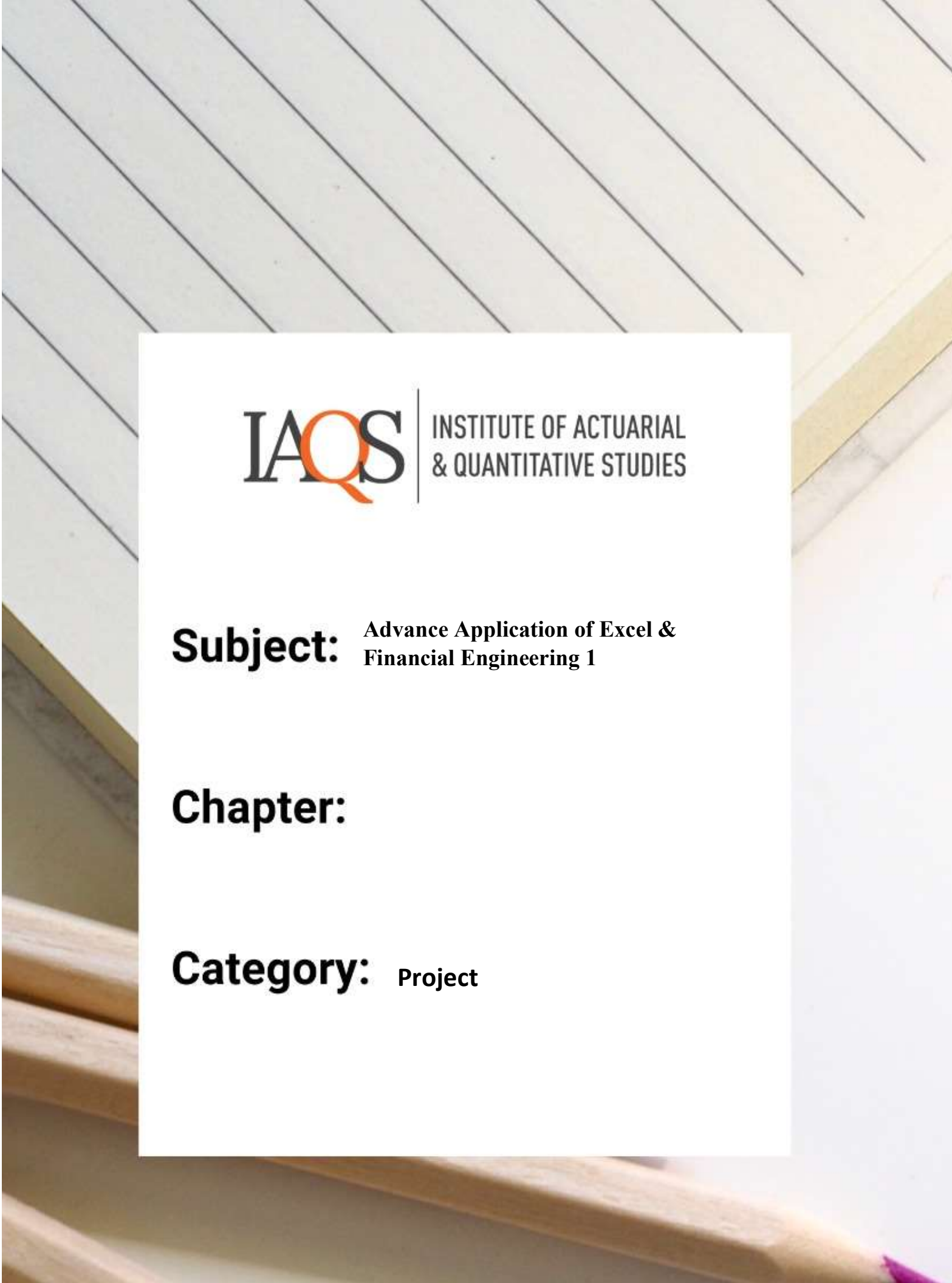

INSTITUTE OF ACTUARIAL & QUANTITATIVE STUDIES

Subject: **Advance Application of Excel & Financial Engineering 1**

Chapter:

Category: **Project**

Project: Advanced Excel and Financial Engineering

The aim of this research project is to encourage you to explore topics beyond your curriculum. This project is a combined exercise in financial engineering and VBA programming where you will be required to implement the concepts developed in financial engineering through programming in Visual Basic.

You are expected to research the topic, make any necessary assumptions and then implement your solutions and present the result.

In the table below, is a list of 4 topics. You are expected to research the problem (12-15 hours) and then implement a simulation using VBA (10-12 hours) and present your results through a presentation (2-4 hours), aided by PowerPoint slides (1-2 hours).

The aim of the presentation is shared learning, you should be able to augment your learning beyond the subject matter taught in class and then through your presentation, share what you have learnt with your classmates.

Deliverables:

1. A powerpoint file, outlining the methodology followed, with a discussion of the results and insights gained from the exercise. The report should be at least 8 slides and not more than 12 slides. **A references slide citing all sources must be included**.
2. A macro-enabled Excel file with VBA code as well as the results of the simulation.
3. A presentation by the project team, not exceeding 12 minutes, delivered before the relevant faculty members.

Project Topics:

A. Asian Option Pricing

B. Use Monte Carlo simulations to calculate the expected payoff for the buyer of an Asian option (put or call) on any NIFTY stock by simulating the path taken by the underlying stock.

[An Asian option (or "average value option") is a special type of option contract. The payoff is determined by the average underlying price over some pre-set period of time. This is different from the usual European options and American options which are valued at the expiration of the contract.]

C. Binomial Option (European) Pricing Using VBA
Use Monte Carlo simulations to calculate the expected payoff for the buyer of a European option on any NIFTY stock by simulating the path taken by the underlying stock.

D. Calculation of VaR for different confidence intervals using Monte Carlo Simulation in VBA
Use Monte Carlo simulations to estimate VaR for a hypothetical portfolio of five NIFTY stocks (of your choice) for 10 different confidence levels: 50%, 60%, 65%, 75%, 80%, 85%, 90%, 95%, 97% and 99%. Present your results.

E. Monte Carlo Simulation of a stock with a given historical volatility
Use Monte Carlo simulations to estimate the price of a NIFTY stock after a period of 1 year from now.
Teams: Students should constitute teams of no more than 5 and no less than 4 team members. Each team member should contribute towards the project.

Deadlines

Submission of presentation:

Date and time of presentations:

CHAPTER NAME
PRACTICE/NOTES/ASSIGNMENT