Indian Institute of Technology Guwahati
Proposal for a New Course / ~~Revision of a Course~~

Course Number & Title: BM606H & Statistical and Data Analysis for Financial Engineering
L-T-P-C: 4-0-0-4
Type of Letter Grading (Regular Letter Grades / PP or NP Letter Grades): Regular Letter Grades
Kind of Proposal (New Course / Revision of Existing Course): New Course
Offered as (Compulsory / Elective): Elective
Offered to: Masters of Business Administration (MBA)
Offered in (Odd/ Even / Any): Any
Offered by (Name of Department/ Center): School of Business
Pre-Requisite: NIL
Preamble / Objectives (Optional):
Course Content/ Syllabus *(as a single paragraph if it is not containing more than one subject. Sub-topics/ Sections may be separated by commas(,). Topics may be separated by Semi-Colons(;). Chapters may be separated by Full-Stop(.). While starting with broad heading, it may be indicated with Colon symbol before the topics. For example: Multi-variable Calculus: Limits of functions, Continuity, ...)* Returns, random walk model; Fixed income securities, coupons, yield-to-maturity, term structure; Quantiles, order statistics, distributions, moments, heavy tailed distributions; Resampling and multivariate statistical models, Regression, least-square regression, multiple linear regression in finance; Time series models, AR(1), ARMA (Autoregressive Moving Average), ARIMA (Autoregressive Integrated Moving Average); ARCH (Autoregressive Conditional Heteroskedasticity) and GARCH (Generalized Autoregressive Conditional Heteroskedasticity) models, Portfolio models, CAPM (Capital Asset Pricing Model), Principal Component Analysis, factor models; Risk management, estimating Value-at-Risk and expected shortfall.
Books (In case UG compulsory courses, please give it as "Text books" and "Reference books". Otherwise give it as "References".
Texts: (Format: Authors, *Book Title in Italics font,* Volume/Series, Edition Number, Publisher, Year.)
1. David, R., & David, S. M. (2015)., *Statistics and Data Analysis for Financial Engineering: With R Examples*, 2nd Edition, Springer, 2015.
2. Remillard, B., *Statistical methods for financial engineering,* CRC press, 2013.
3.
References: (Format: Authors, *Book Title in Italics font,* Volume/Series, Edition Number, Publisher, Year.)

Detailed Course Content (Optional) It will not be included in the Courses of Study Booklet		
Sl. No.	Broad Title / Topics	Number of Lectures
1		
2		
3		
4		
5		
	Total Number of Lectures =	