Software Metrics Syllabus

2019-2020

BSSE, IIT, NSTU

Course Code	**:**	**SE 3203**	**Credits**	**:**	**02**
Credit Hours	**:**	**02/week**	**Exam Hours**	**:**	**03**
Class	**:**	**Batch 01**			

Content of the Course:

Topic	Lesson Plan	Resources
Introduction to Software Metrics	Measurement in Software Engineering, Scope of Software Metrics	**NF_SM:** Chapter 1
Measurement Fundamentals	Measurement Theory, Measurement And Models, Measurement Scales, Measures of Central Tendency and Variability, Validity and Reliability of Measurement, Measurement Error, Limits of Software Metrics	**NF_SM:** Chapter 2
Software Attributes	Software entities: Processes, Products, Resources; Attributes: Internal attributes, External attributes	**NF_SM:** Chapter 3.1
Determining What To Measure	The Goal Question Metrics Approach	**NF_SM:** Chapter 3.2
Measuring Size	Properties of Software Size; Code Size: Lines of Code; Design Size; Requirements Analysis and Specification Size; Functional Size Measures And Estimators**:** Function Points, COCOMO II Approach; Applications Of Size Measures**:** Using Size To Normalize Other Measurements, Size-based Reuse Measurement, Size-based Software Testing Measurement;	**NF_SM:** Chapter 8, Chidamber and Ke… [CMSC 645 - Function Point Example], [**Effort Estimation Tool Based on Use Case Points Method**]

Measuring Structure	Aspects of Structural Measures: Structural Complexity Properties, Length Properties, Coupling Properties, Cohesion Properties; Control Flow Structure: Flowgraph Model And The Notion Of Structured Programs; Cyclomatic Complexity; Code Structure And Test Coverage Measures; Design-level Attributes: Models Of Modularity And Information Flow, Tree Impurity, Internal Reuse, Information Flow; Object-oriented Structural Attributes and Measures: Coupling, Cohesion, Length, Reuse;	**NF_SM:** Chapter 9,
Defects and Defect Metrics	Faults Versus Failures; Defect Dynamics and Behaviors; Defect Projection Techniques and Models; Additional Defect Benchmark Data; Cost Effectiveness of Defect Removal by Phase	**NF_SM:** Chapter 10.2, defect_removal_eff…
Software Reliability Measurement and Prediction	Basics of Reliability Theory; Software Reliability Problem; Software Reliability Theory; Reliability Models; Failure Arrival Rates; Availability	**NF_SM:** Chapter 11.1 & 11.2
Empirical Investigation	PRINCIPLES OF EMPIRICAL STUDIES, PLANNING EXPERIMENTS, PLANNING CASE STUDIES AS QUASI-EXPERIMENTS,	**NF_SM:** Chapter 4, 05-experiments.pdf , 06-case-studies.pdf

Resources:

Sl. No.	Code	Document Name	Document Link
01	**NF_SM**	Software Metrics: A Rigorous and Practical Approach, Third Edition *Norman Fenton and James Bieman.*	Norman Fenton, Sof…