**BIT 3106 Software Engineering for Internet Applications (4 CU)**

(a) **Course Description:** This course unit shall cover challenges of concurrency (say 1000 people might be using the system at the same time), unpredictable load (say 100,000 users might show up tomorrow even if only 100 are using the system today), security risks, opportunity for wide-area distributed computing, creating a reliable and state-full user experience on top of unreliable connections and stateless protocols, extreme requirements and absurd development schedules , requirements that change mid-way through a project, sometimes because of experience gained from testing with users, user demands for a multi-modal interface: Web, mobile (WAP), and voice.

(b) **Aims**: Modern internet applications exhibit a form of online community in which customers are an integral part of the system. The aim of the course is to learn:

• About the stateless and anonymous protocol that makes Web development different from classical inter-computer application development

• Why the relational database management system is key to controlling the concurrency problem that arises from multiple simultaneous users

• To develop software to read and write Extensible Markup Language (XML).

(c) **Learning outcomes**: Students completing this course will obtain in-depth practical understanding of engineering techniques that are used to analyze and design internet based applications. Successful completion of students in this course unit will enable them to engineer modular, extendible internet applications

(d) **Teaching and learning pattern**: The preferred mode of teaching is laboratory based where most of the learning occurs during the completion of problem sets. Students organize into groups the purpose of building an online learning community. Each problem set is devoted to adding features and capabilities to the online community. We encourage students to work with a real customer or client. Good sources of clients for online communities include organizations that want knowledge sharing systems (intranets) and non-profit organizations that wish to operate a public online learning community within their area of expertise. Students who themselves have a passion for a particular topic sometimes build an online community in that area.

(e) **Indicative content**:

• **Pre-requisite:** This is a course for students who already have some programming experience

• Basics (Stateless vs. State-full), planning for Internet applications, software structure,

• User registration and Management, Content Management

• Software modularity, Discussion boards, adding mobile users to the community

• Voice (VoiceXML), Scaling Gracefully, Search, and distributed computing with HTTP, SOAP, and WSDL

(f) **Assessment method**: Assessment method: Continuous project that a student will work on as individual or as a group. The project will contribute 40% and a final examination 60%.

(g) **Reference books**:

(i) Software Engineering for Internet Applications by Eve Andersson, Philip Greenspun, and

Andrew Grumet MIT Press 2006; ISBN 0262511916;