# NIIT University, Neemrana

NH-8 Delhi-Jaipur Highway, District Alwar, Rajasthan-301 705

# Educational Technology Area Ph. D. Programme in ET 2012-13

## **Eligibility for Admission**

- a. Candidates with M. Tech degree in ET
- b. Candidates with M. Tech. in any discipline other than ET, M. Sc./M Sc (Tech), MCA, M Pharm, MBA, M Ed, M Com, MA, M Phil or equivalent and normally with GNIIT level computing competence or its equivalent and with 5 years of ET experience in teaching institution or industry

### **Details of Entrance Test**

- ET Area Ph D Admission Test will be in three different components:
  - c. First component will be a 2-hour written test and it will in an overview and summative manner assess the candidates for the syllabus given. Total maximum marks 30.
  - d. Second component will be a paper study. Candidates will then have seminar/viva assessment based on the paper studied as well their answers in the written test. Total maximum marks 40.
  - e. Third component will be broad presentation by a student on the research query s/he plans to investigate for the PhD programme. This may be an individual presentation or a brainstorming based group discussion. Total maximum marks 30.

# **Syllabus for Entrance Test**

#### **Course title: Principles and Practices of Learning Engineering**

CT-driven digital economy *is* propelling convergences between any productive economic activity (a business *that it is*, which *is* necessarily process-centric) & innovation, and, thereby, between informational work & learning. Educational Technology (ET) in the form of a

networked ET system, which automizes integration of process-centric-business-informationlearning-processes with business-processes is a specialization drawn from Learning Engineering (LE). Specifically, LE is the application of interlocking set of cognitive-themes- and organizational-information-flow-themes- driven formal principles and techniques for the planning, analysis, design, construction, control and maintenance of (a) mass-customized, "smarter" (i.e., integrity) information production (i.e., teaching-learning) systems, and (b) learnt information produced there from, which are integrated in enterprise-wide networks of mobility value stream(s). ET entails increased budgets.

The course is designed to enable professionals from every quarter to create business effectiveness and productivity, efficiency & economy by (a) leveraging LE, (b) *creating* (as against adding) value for business by appropriate ET development, (c) introducing cost cutting measures in educating & training flexible workforce, and (d) in tandem with their basic work-domain-specific preparation developing managers/workers as ET professionals, who, given the reality of a continually changing and complex requirements' market, can now contribute to work-desks and company growth as work-process-change-agents and further as business transformation leaders.

#### **Course Title: Learning and Education: A Comparative Study of Theories and Practice**

This course provides an understanding of the learning theories as presented by various psychologists, educationists and social scientists. It gives a perspective on recent developments in learning and technologies and its impact on knowledge societies. A critical review of 'Educational Technology' as a discipline to impact change management, quality initiatives and leadership management is a clear focus.

#### **Course Title: Web Design and Programming**

Most of the applications are now expected to have some kind of web interface. Therefore it is important that students of this program are comfortable with the nuts and bolts of website creation. The end objective of this course is enable the student should be able to make a reasonably dynamic website. In the process of doing so the students will get exposed to a range of tools for creating simple, static website. This will be followed by client side and server side scripting.

#### **Course Title: Advanced Productivity Tools**

This course recapitulates basic Lifestyle Practices and Information & Communication Technology (ICT) products with the potential to enhance personal and group productivity, and introduces further advanced practices and products. The emphasis is on collaborative features of such products, and in their integrated use in simulated professional situations. The course also familiarizes students with tools and techniques for enhancing research and teaching. Topics covered are customized for a specific group of students consistent with the up-to-date and application orientation of this course.

#### **Course Title: Oral and Written Communication**

Through an intensive study of language structures, idiomatic usage and extensive practice of Listening, Speaking, Reading and Writing skills, students are able to obtain the proficiency level

of English. This course also covers Communication process and barriers and is customized to help students excel in industry specific roles. It covers the following aspects leading to overall language improvement. Speaking skills – phonetics, stress, rhythm and intonation, non verbal skills, content organization and coherence. Reading skills – intensive and extensive reading, SQ3R technique, vocabulary etc. Writing skills – clear writing, synopsis, précis writing, letters, circulars, agenda, minutes, report. Listening skills- Filtering of information, taking notes, effective response, questioning techniques etc. Adequate emphasis is given on the presentation skills with the audio video component as an integral part of the learning.

#### **Course Title: Mobile Computing and its Applications**

This course introduces the students to the following aspects of mobile computing:

- 1. The technology: This section will take the students through capabilities and usage models of deployed and soon-to-be-deployed technologies GSM, GPRS, UMTS, HSDPA (3G), CDMA and WCDMA,
- 2. Hardware Platforms: ARM/Intel Atom
- 3. Operating systems for the mobile phones (Symbian, Andriod and Windows Phone 7)
- 4. Application development platforms for mobile phones (Java ME. Windows Phone, Adobe Flash lit/Action Script)
- 5. Rapid application development tools case studies.

#### Course Title: e-Learning Tools and Techniques for Online Learning

e-Learning refers to all forms of learning and teaching that uses the electronic medium, be it the Internet, the stand-alone computer or mobile devices. Of late e-learning is in focus due to several advantages it offers – especially as it enables anytime, anywhere and self-paced learning. The major driver for e-learning has been corporate groups for their organizational training. Currently all players in education and training – school, universities, training institutes are trying to integrate e-learning into their offerings.

This is an in-depth course that attempts to give students a comprehensive understanding of the online learning aspects of e-learning such as content creation and management, content delivery and learning management, assessment creation and management, tools for synchronous and asynchronous communication, etc. The course will lay emphasis on online learning management systems, online assessment systems, etc. The students will gain hands-on experience of open-source course management system such as Moodle, including creation of Individualized Learning Plans, e-portfolios, etc.

#### **Course Title: Applied Instructional Design**

Students will be able to analyze how learning occurs and apply learning theories and instructional design models to learning situations. This course on applied instructional design will provide an instructional perspective to the learning paradigms/theories; examine the cognitive and non-cognitive processes underlying learning behavior and the relation of these processes to instructional design; analyze learning situations and identify associated technology-related design challenges; explore constructivist and other theoretical perspectives and their implications on the design and evaluation of learning environments; perform procedural, learning, and content analysis in order to define the level of learning performance and instructional components; explore selection and application of different models of instructional

design and explore selection and application of appropriate media formats for delivering instruction.

#### **Course Title: Technology Management**

The course aims to develop basic understanding of "technology" and the characteristics of technology; why and how business organizations increasingly use technology-based strategies to gain competitive advantage; how technology impacts the organization structure; how organizations 'manage' technology and technology development and what are the tools or techniques of managing technology. At the end of the course, the students will be able to perceive the role of technology in businesses and will have the required understanding of how the organizations must manage technology to stay competitive.

#### Course Title: Contemporary issues

The course will serve multifarious objectives as briefly presented below.

- 1. In depth investigation of a chosen contemporary societal issue or problem of interdisciplinary nature suggestion of a plausible solution should facilitate research culture.
- 2. As the chosen problem would invariably be interdisciplinary, students should develop an ability to analyze a problem from holistic perspective. They should discover the interplay of subjectivity and objectivity, which explains any problem.
- 3. Depending upon the number of registrations in the course and subject discipline of students, more than one issue will be studied and discussed through the course. This should give students an opportunity to widen their knowledge about contemporary issues facing global community.
- 4. The course methodology will require students to discuss in a group, give regular seminars, and aim at publishing at least one article. This should help them hone oral and communication skills.
- 5. Not the least, students should develop a global outlook and awareness.

#### **Course Title: Research Methods and Knowledge Economy**

Course plan includes studies in purpose and scope of evaluation, types and forms, tools of evaluation. Research includes studies in nature of knowledge and inquiry- paradigms and orientations, interdisciplinary inquiry in ET, sources of educational data and units of study, planning, preparation and design of the study, tools and techniques of research, methodologies, analysis, and interpretation along with introduction to statistical methods in research. Research colloquium is required to make presentations for continuous feedback and development of study and paper to make research functional in professional situations and worthy of publication. Colloquiums are in webinars mode when online and face to face when on campus.

#### **Course Title: ICT for Education**

This course highlights the information and communication technologies that are enabler for the effectiveness and spread of Education. The course will provide reasonable understanding to the Educational Technologies to use Internet, wireless and multimedia technologies to effectively design products and systems for Education. The course also will provide the quantitative

understanding to engineer the education systems using computers, broadband networks, different internet protocols and wireless systems.

#### **Course Title: Integrity Learning System**

A practical implication of a networked ET system controlling a business system is *that* it develops a dynamic learning-decision-making business model/process, and demands informational work activities, hitherto not considered, and information origination resource optimization for regulation. In the presence of requirements of "smarter" processing of cognitive- and business-information-flow- themes driving it and, given the implications of market environmental factors, this information processing becomes complex and gets besieged with uncertainties.

Even one generation ago, large "task" centric education & training systems were implemented quickly and with very little documentation, but process-centric education & training systems as above are increasingly burdened with the data & information, that too fraught with uncertainty, and in the wake of information processing (read learning) methods of yesterday not only tend to become ends in themselves, but also slow down the learning processes in business and increase the risks of failures. This calls for application of LE for simplification and speed.

Within this framework this course analytically introduces learning business modeling and processes and applies to them "System Dynamics Modeling" as a tool for developing Integrity Learning System design basis for business competitive advantage and continuity planning in complex and changing market environments.

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