Designing and Developing Flipped Classroom e-Learning Instruction
For Engineering and Science Education

Overview

Lecture model of teaching often does not lead to achievement of desired learning outcomes. Learner-centered strategy like flipped classroom using e-learning methods has evolved as extremely useful alternate learning model in the digital age. Flipped classroom is a pedagogical model evolving through widespread adoption of the World Wide Web. Here, the standard lecture and homework elements are reversed. The instructional content is delivered electronically to students at home, using short instructional videos, online activities, collaborative projects and video lectures. The time in class is now focused on problem solving, concept development through discussions, teacher interaction and peer collaboration to help students develop higher order learning objectives. Instructional videos and lecture materials are created by teachers and posted to secure internet websites. In flipped instruction model selected materials which are available online can also be integrated into the course curriculum.

This model of instruction caters to the individual differences amongst learners. Slow learners can work through learning materials repeatedly until the content is understood, while gifted learners can have access to more challenging content to meet their interests and sharpen their intellectual skills.

To effectively implement an e-learning model with flipped classroom strategies it becomes imperative for the teachers of Engineering and Science education to develop and practice the skills necessary for utilizing technology appropriately. The proposed course introduces the participants to proven pedagogical methods, research-based principles of e-learning through guided classroom and field experiences.

The course participants will be trained to systematically integrate many on-line instructional resources into their course material. They will practice developing multimedia materials that address the diversity in Indian education. During this intensive two week course the participants will engage in planning, designing and developing student centric e-learning course-ware using ICT and other learning management systems. Finally, they will demonstrate, test and evaluate the efficacy of their work and receive expert feedback before using such materials in the course.

Course contents in brief:

*Understanding the flipped classroom model of instruction. *Principles of e-learning and their application to flipping instruction. *Use of new interactive and collaborative tools to enhance student learning. *Designing and developing e-learning materials through hands-on activities, individual and collaborative projects and field testing for their own courses.*Utilization of on-line and other resources in creating course materials and making them accessible using emerging technologies. *Designing e-learning materials to meet the needs of diverse learners. * Instructional delivery systems: Moodle and other Learning Management Systems. *Creating and using formative and summative evaluations to test the suitability and effectiveness of newly created e-learning material.
### Modules

**Designing and Developing Flipped Classroom e-Learning Instruction for Engineering and Science Education**

**Dates:** 9th - 18th May 2016

*Number of participants for the course will be limited to fifty*

### You Should Attend if ------

- You are a faculty member working in Engineering, Technology, Science, Arts, Education and Management disciplines in higher education institutions/universities.
- You are interested in employing innovative methods like Flipped Classroom and e-Learning in teaching learning process.
- You intend to carryout research on ‘the use and impact of novel teaching methods’ like Flipped Classroom, Technology for Education, e-Learning etc.
- You are from a Training organization / Research & Development Organization / Consultancy firm / Industry and are interested in practicing new teaching/learning techniques in your profession.
- You are a Student or a Research Scholar aspiring to be in teaching or training profession.

### Fees

**Faculty (Internal and external) and Scientists:** Rs. 4000/-

**Participants from Training Organizations / Industry / Consultancy firms:** 8,000/-

**Students and Research Scholars:**

- Without award of grade : Rs 1000/-
- With award of grade :Rs. 2000/-

**Participants from abroad:**

- Students: USD 100
- Other participants from abroad: USD 200

The registration fee includes instructional materials, tutorials, laboratory and computer use, free internet facility, working lunch, mid-sessions tea & snacks. Out station participants will be provided accommodation and boarding in the Visitors Block in the campus on payment. The charges range from Rs.3000/- to Rs. 4000/- for the entire duration of the course.
The Faculty

Dr. Barry Sponder has been teaching educational technology and flipped learning instruction for over 35 years, in the USA and abroad. Since 1997 he’s been a Professor of Instructional Technology at Central Connecticut State University. Previously, he held similar positions at the National Institute of Education (Singapore) and the University of Alaska-Fairbanks (USA). Dr. Sponder teaches on-campus and online courses such as Using of Technology and Flipped Instruction, Making Instructional Materials, Instructional Computing, Instructional Design, Distance Learning and Computer-Based Instruction. He has over 60 publications and presentations in both national and international Journals and Conferences, demonstrating innovate techniques for integrating educational technology in the classroom. His books titled Best Practices in Online Education and Thirty Years of Flipping Classroom Instruction are expected to be released in 2016. He is a recipient of The Best Multimedia Product Award from Apple Computer, a Christa McAuliffe Award in Educational Pioneering and the Award for Outstanding Contributions to Graduate Education from the University of Maryland University College. He works with educators and school systems to implement flipped classrooms.

Prof I. Ajit Kumar Reddy is a Professor of Chemistry at National Institute of Technology Warangal (NITW) and is a Professor in-charge of Centre for Educational Technology and Continuing Education Programmes. He is also the Coordinator of the Teaching- Learning Centre being established at NITW. He received his Ph.D in Chemistry from Indian Institute of Technology, Kanpur in the year 1980. He has 35 years of teaching, training and research experience. His research interests are in the areas of Catalysis and Educational Technology. He has published / presented over 65 original research papers in reputed International / National journals and conferences. He has carried out six R & D Projects funded by AICTE, MHRD and DST. He has conducted a number of training programmes on developing teaching skills among Engineering and Science faculty. He has also trained students to improve their learning skills. He is a co-developer of the e-learning course in Chemistry which is a part of Pedagogy Project initiated by MHRD under NME-ICT. He is the recipient of 'Best Science Faculty Award’ for the year 2015 by NITW and NITW Alumni Association.

Dr. Madhavi Kesari, with a Ph.D in ELT from Osmania University and M.Phil in ELT from the Institute of English & Foreign Languages University Hyderabad, has 15 years of teaching and research experience. Her research and academic interests are in designing task based ESP courses, Multiple intelligences - Visual Literacies, employing Flipped classroom methods of teaching, Learner engagement strategies, Innovative methods and behaviourist approaches to language learning etc., She has authored five books, published 34 scholarly articles and presented 22 papers at various national and international conferences and seminars. She has also organized six workshops on English language teaching and learning and delivered number of invited talks on 'employing eclectic approaches to language learning/teaching’, ‘blending technology into education etc. She has contributed significantly to the design and development of curriculum for Ph.D programme offered in the schools of ELT, Linguistics and Literature. She is a Core team member of Centre for Educational Technology and Teaching-Learning Centre at NIT Warangal.

Course Coordinators

Prof. I. Ajit Kumar Reddy
Phone 8332969704
E-mail: iakreddy@nitw.ac.in

Dr. K. Madhavi
Phone 8332969522
E-mail : madhavik24@nitw.ac.in

Register at http://www.gian.iitkgp.ac.in/GREGN/index