

INSTRUCTIONAL TECHNOLOGY FOR TEACHING OF GENERAL ELECTRONICS

Course Code: EDBET367

Credit Hours: 3

Course Description

The course "Instructional Technology for teaching of Electronics" is designed to provide the knowledge and understanding of the modern instructional technology used for teaching of Electronics. Upon completing of this course the students should be able to select, use and use available and valid instructional technology. They should also be able to select the most appropriate instructional best suited for the topic. The students will become familiar with the professional as well as ethical issues in use of using instructional technology. The course will also provide an understanding of the basic terminology, methods, designs and models as they relate to the area of General Electronics. It develops awareness about the procedures and options available worldwide in Instructional Technology in professional pursuit.

Learning Outcomes

- After successful completion of this course the students will be able to:
1. Understand the concept of instructional technology.
 2. Recognize the importance of instructional technology in Technical Education.
 3. Relate the use of instructional technology with various methods of teaching.
 4. Know the modern instructional technologies being used worldwide.
 5. Design instructional technology with the help of low cost no cost material.
 6. Plan science lessons incorporating instructional aides and best teaching method.
 7. Know the advantages and limitations of various instructional technologies.
 8. Make effective use of computers in teaching General Electronics.
 9. Make effective use of laboratory apparatus in teaching concepts of General Electronics.

Contents

1. Nature of General Electronics as a field of Technical Education

- 1.1 What is the nature of General Electronics?
- 1.2 Application of Scientific Method to study General Electronics.
- 1.3 How do Technologists conduct research? Some classic work in field of Technical Education.
- 1.4 Technical Education and the human welfare

2. Classroom Communication

- 2.1 What is teaching, learning and instruction?
- 2.2 Elements of classroom communication
- 2.3 Barriers to classroom communication

3. Instructional Aids or Teaching Aids

- 3.1 What are the Instructional or teaching Aids
- 3.2 Importance of teaching aids
- 3.3 Different types of teaching aid material
- 3.4 Principles for selection of teaching aids
- 3.5 Principles for using of teaching aids

4. Media in Teaching and Learning of General Electronics

- 4.1 Materials for visual communications: Bulletin Boards, Chalk Boards, Flannel Boards, etc.
- 4.2 Graphic Materials: Graphs, Charts, Cartoons, Maps and Globes
- 4.3 Still Pictures:

- 4.3.1 Opaque projector
- 4.3.2 Over-head projector and transparencies
- 4.3.3 Slide projector and film slides
- 4.3.4 Filmstrip projector and filmstrip
- 4.4 Audio-Materials, Radio and Tape-Recorder
- 4.5 Motion Pictures, Films and Video
- 4.6 Real things, Models and Demonstrations
- 4.7 Games, Simulations

4. Methods and Procedures in Individualized Teaching Strategies for General Electronics

- 4.1 Rationales and significant features
- 4.2 Methods of Individualization
- 4.3 Programmed Instruction
- 4.4 Computer Assisted Instruction and Computer Managed Instruction
- 4.5 Modular Instruction
- 4.6 Personalized System of Instruction
- 4.7 Individually Prescribed Instruction
- 4.8 Audio-tutorial Method

5. Designing Instruction in General Electronics

- 5.1 Designing Instructional Sequence
- 5.2 Model for Systematic Planning of Instruction
- 5.3 Steps in Instructional Planning
- 5.4 Designing Individual Lesson/unit Planning

6. Designing Conceptual Toolkit for teaching General Electronics

- 6.1 What is the significance of low cost no material in teaching
- 6.2 Types of low cost no material
- 6.3 Use of low cost no cost material
- 6.4 Concept of toolkit
- 6.5 Use of low cost no material in developing toolkit for different arts n crafts concepts

7. Use of modern Instructional Technology in teaching of General Electronics

- 7.1 Use of smart interactive white boards for teaching General Electronics
- 7.2 Use of LCD projector for teaching General Electronics
- 7.3 Creating blogs and websites for teaching General Electronics
- 7.4 Use of on line media for teaching General Electronics

8. Designing Instructional modules for teaching General Electronics

- 8.1 What is modular instruction?
- 8.2 Lesson planning for modular instruction for teaching General Electronics
- 8.3 Planning technology for modular instruction

Teaching-learning Strategies

The instructional strategies will focus on constructionist learning approach. These strategies will be diverse in line with the course contents. Therefore, these strategies will include but not limited to demonstration, cooperative learning, collaborative learning, teacher and student-led discussion, individual and group presentations, reflective practices and classroom activities.

Assessment and Examinations

The students will be assessed according to the following criteria.

Examination	Marks Distribution
Sessional work	25 %
Mid Semester	35%
Final Semester	40%

Suggested Readings

- Adafruit Industries, *Practical Electronics for Inventors*, Fourth Edition ID: 1261 - THE ELECTRONICS KNOW-HOW YOU ..
- Ahmad, J. (2011). *Teaching of biological sciences (Intended for Teaching of Life Sciences, Physics, Chemistry and General Science)*. New Dehli: PHI Learning Pvt. Ltd.
- Bogart, T. F. Jr. (1997). *Electronic Devices and Circuits (11th ed)*. _____: McGraw-Hill
- Connaway, L. S. (2003). Electronic Books (eBooks): Current Trends and Future Directions. *DESIDOC Bulletin of Information Technology* 23(1), 13-18.
- Forrest, M. Mims. III. (2000). *Electronic Sensor Circuits and Projects*. Lincolnwood: Master Publishers.
- Geier, M. J. (2011). *How to diagnose and fix everything electronic*. New York: McGraw-Hill.
- Grob. (1992). *Basic Electronics (7th ed)*. _____: McGraw- Hill International Editions.
- Malhotra, V. (2007). *Methods of teaching biology*. New Delhi: Crescent Publishing Corporation.
- Martin, R. E., Sexton, C. M., & Gerlovich, J. A. (2001). *Teaching science for all children*. Boston: Allyn and Bacon
- Newby, T. M., Lehman, J., Russell, J., Stepich, D. A. (2000). *Instructional Technology for Teaching and Learning: Designing Instruction, Integrating Computers, and Using Media (2nd ed)*. Upper Saddle River, N.J.: Prentice Hall.
- Nilson, L. B. (2016). *Teaching at its best: A research-based resource for college instructors*. New York: John Wiley & Sons.
- Scherz, P., & Monk, S. (2016). *Practical Electronics for Inventors (4th ed)*. New York: McGraw-Hill.
- Ramakrishna, A. (2012). *Methods of teaching life sciences*. Chennai: Pearson.