Semester: III

Core Course

13. Course Code & Title: MPC 53 04 & Health Technology and Informatics

Credit: 3

Course Objectives

The objective of this course is to develop a basic understanding of health technology and informatics among the post-graduate public health students. The course is designed to equip students with the knowledge and application of information, communication and technology (ICT) in the field of public health and hospitals. In particular, the course will enable them understand how the application of health technology and ICT aids in the prevention, promotion, control, treatment and management of diseases in communities. Online-Lectures on electronic health records (EHR), hospital-based registries, m-Health, tele-health, HMIS, and GIS are specifically designed to make the students understand and apply the potential of information technology in transforming the health status of human population. Specifically, this course will enable the students to:-

1. Understand the important role of Information Communication and Technology in potentially revolutionizing healthcare delivery, administration, education, and research;
2. Distinguish the various types of healthcare information, including knowledge, data, sources, processes and standards;
3. Identify major health informatics applications and develop basic familiarity with healthcare IT products/services;
4. Analyze obstacles and success factors for implementation and integration of information, communication and decision technologies in healthcare;
5. Discuss the technical and policy implications of introducing informatics applications into healthcare for process efficiency and quality of care;
6. Develop teamwork skills to mediate the communication between healthcare professionals and information technology personnel;

Skills developed:

On successful completion of the course the students shall be skilled at health information standards, and application of health technologies for prevention and control of diseases.

Teaching Methods: The delivery of this course will take place using a variety of methods and modalities. On-line lectures using power point presentations, self-study, case studies, written assignment and quiz will be utilized to deliver this course.

Sessions	Topic	Classroom/Field/Take Home Assignments	Suggested Reading Materials
3	**Unit-I: Overview of Health Technology and Informatics** - Definitions, scope, importance and limitations of health technology and informatics. - Concept of data, data sources, information and knowledge with special focus on health. - Health information standards and types of standards like systems, vocabulary, messaging, and security standards. - International and Indian Standards Developers like ISO, DICOM etc. - Interoperability and types of interoperability like basic, technical and semantic interoperability.	On-line Lecture and self-study	1. Hovenga E, Kidd M, Cesnik B (1996). Health Informatics: An Overview. Churchill Livingstone, Australia. Available at http://www.achi.org.au/docs/HNI_Book/ 2. Jamal, A., McKenzie, K., & Clark, M. (2009). The impact of health information technology on the quality of medical and health care: a systematic review. *Health Information Management Journal*, *38*(3), 26-37.

3	**Unit-II: Building Blocks of Health Informatics** - Database Management and Database Management System - Registry and Disease Specific Registry Knowledge Management (KM): Concept, Focus of KM, KM in Public Health, and Role of Health Informatics in KM.	Online Lecture and self-study	O'Carroll, P. W., Yasnoff, W. A., Ward, M. E., Ripp, L. H., & Martin, E. L. (Eds.). (2003). Public health informatics and information systems.
3	**Unit-III: Tools of Health Informatics** - EHR and EMR - m-Health and m-Health apps - Tele-medicine and Virtual consultation - Social Media and Public Health - GIS and Public Health - Health trackers, wearable devices and home health devices	Online lecture & self-study	1. Häyrinen, K., Saranto, K., &Nykänen, P. (2008). Definition, structure, content, use and impacts of electronic health records: a review of the research literature. *International Journal of Medical Informatics*, *77*(5), 291-304. 2. Pal, A., Mbarika, V. W. A., Cobb-Payton, F., Datta, P., & McCoy, S. (2005). Telemedicine diffusion in a developing country: the case of India (March 2004). *IEEE Transactions on Information Technology in Biomedicine*, *9*(1), 59-65. 3. Istepanian, R., Laxminarayan, S., &Pattichis, C. S. (2006). *m-health*. New York, NY: Springer Science+ Business Media, Incorporated.

3	**Unit-IV: Career Opportunities in Health Informatics** - Skills set of health technology and health informatics professionals - Government of India's Institutions in Health Informatics and their role and contribution to health sector in India - Role of Multi-national IT companies in health informatics - Digital India Initiative by the Govt. of India - Govt. of India's Laws and Regulations on Health Data Protection and Privacy. -	Online-Lecture, analysis of ICT video, individual case-study analysis	Lehoux, P. (2006). *The problem of health technology: policy implications for modern health care systems*. Taylor & Francis. Shojania, K. G., Duncan, B. W., McDonald, K. M., Wachter, R. M., & Markowitz, A. J. (2001). Making health care safer: a critical analysis of patient safety practices. *Evid Rep Technol Assess (Summ)*, *43*(1), 668.
4	**Evaluation and Feedback** i. MCQ- Quiz/ Assignment/ Written test 20 Marks ii. Online PPT/ on contemporary health informatics topics (tele-medicine, virtual consultation, software development life cycle, in classroom based setting – 20 Marks		

10	**30 hours**		

Additional Readings Resources

Journal Articles:

1. Bennett, Gary G. and Russell E. Glasgow. 2009. "The Delivery of Public Health Interventions Via the Internet: Actualizing Their Potential." Annual Review of Public Health 30(1):273-92. doi: doi:10.1146/annurev.publhealth.031308.100235
2. Eysenbach, Gunther. 2009. "Infodemiology and Infoveillance: Framework for an Emerging Set of Public Health Informatics Methods to Analyze Search, Communication and Publication Behavior on the Internet." Journal of medical Internet research 11(1).
3. Thomas G Savel and Seth Foldy (2012). The Role of Public Health Informatics in Enhancing Public Health Surveillance, Morbidity and Mortality Weekly report, Centers for Disease Control and Prevention 61 (03); 20-24. Available at https://www.cdc.gov/mmwr/preview/mmwrhtml/su6103a5.htm
4. Yasnoff, W. A., O'carroll, P. W., Koo, D., Linkins, R. W., & Kilbourne, E. M. (2000). Public health informatics: improving and transforming public health in the information age. Available at http://www.nwcphp.org/docs/pdf/phi.pdf
5. Heeks, R. (2006). Health information systems: Failure, success and improvisation. *International journal of medical informatics*, *75*(2), 125-137.

Books:

1. Magnuson, J. A., & Fu, P. C. (2014). Public health informatics and information systems. London, UK: Springer. Available at https://books.google.co.in/books?hl=en&lr=&id=N1q4BAAAQBAJ&oi=fnd&pg=PA3&ots=Y--XQbFWe-&sig=y6oB6naUyR0byMzwTNnKdV1eoTk#v=onepage&q&f=false