



UNIVERSIDAD DISTRITAL
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FRANCISCO JOSÉ DE CALDAS
FACULTAD DE INGENIERIA

SYLLABUS

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FACULTAD DE INGENIERÍA

Maestría en Ciencias de la
Información y las Comunicaciones

Master on Information and Communications Sciences

emphasis : All

ACADEMIC SPACE (Subject): Telehealth and Telemedicine

- Required () : Basic :() Supplemental: ()
- Elective (X) : Intrinsic () Extrinsic ()

NÚMERO DE CREDITOS:

COURSE TYPE: THEORETICAL: _____ **PRACTICE:** _____ **TEO-PRAC :** x

Methodological alternatives: Lecture Class: (x), Seminar: (), Seminar – Workshop (x), Workshop (), Practices (), Tutored Projects (x), Other: _____

Academic space

In recent decades, information and communications technologies (ICTs) have advanced by leaps and bounds leading to the acquisition, transmission and analysis of information to new horizons. Colombia has a legislation specifically for telemedicine, which establishes the guidelines for the development of telehealth in the Colombian territory. From the validity of such legislation, up to five per cent of the investment budget of the Communications Fund, a special administrative unit attached to the Ministry of Communications, was allocated to the financing of the investments required to develop telehealth in public health institutions in Colombia, in accordance with the recommendations of the Advisory Committee of Telehealth.

After this legislation entered into force, insurers and service providers of the General System of Social Security in Health (SGSSS, by its Spanish initialism) in Colombia, regardless of benefit plans, started to offer within their portfolio of services, telemedicine as an adequate, effective and rational modality of service, facilitating open access and choice on the part of the users, which will contribute to their development and sustainability. Moreover, there is a trend towards the creation and support of telemedicine networks, as it has been proven that they can reduce costs and increase the opportunity of access to health services, being some of its main objectives to bring home care, to contribute to the prevention of diseases and to improve health care, without exempting service providers their responsibility to prioritize the personalized provision of health care services, within the framework of the General Social Security system in Health.



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It is appreciable that technology is a mean and not an end. In this context, ICTs improve the access to health services and contribute to the improvement of efficiency by reducing service costs. Due to the reduction of the number of referrals to higher level institutions that are in most cases in large and medium sized cities, it is possible to decongest the high-complexity services and the problem-solving ability of health professionals. In this scenario, it is of utmost importance the participation of trained engineers to provide solutions in communication technologies issues.

The current challenge is to ensure that ICTs contribute to improve the quality of life and well-being of people and help to reduce imbalances and inequalities in the access health services, optimize the cost-benefit ratio, promote their development and growth, i.e. to achieve more integrated and not only more interconnected health services.

It is necessary that the professionals of the District University Francisco José de Caldas and the professional community in general, are up to date in this area of knowledge, so that they incur in the labor market whose trends are the national development plans in the field of health services.

PRE-REQUIREMENT/PREVIOUS KNOWLEDGE: None

Course objectives



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GENERAL OBJECTIVE:

Students will understand the conceptual, regulatory and methodological bases for the development of solutions with the implementation of ICTs to the processes of health care and, in general, to businesses of telehealth and telemedicine.

SPECIFIC OBJECTIVES

- Students will study the legal, regulatory and standardization environments involved in technological solutions for telehealth and telemedicine services.
- Students will study the different infrastructures for the provision of telehealth and telemedicine services.
- Students will develop a service workshop, in reference with the Colombian legislation, to present a solution to a case of telehealth and/or telemedicine service.
- Students will analyze the real possibilities of technological and scientific development in Colombia, in response to the demand for technological application and innovation in the Colombian health market.

Skill training

Citizen skills:

- To train the master with recognition for the social problems that arise in the context of the provision of health services and their support on ICTs.
- A master who participates with democratic responsibility in the decisions of the institutions responsible for managing and offering health services from technology.
- A magister who has a plurality of thought in the face of technological solutions and scientific offer in the solution of social problems.

Basic skills:

- A master with his own identity and critical decision who can interact between interdisciplinary science teams, including basic sciences and health sciences.

Employment skills:

- Masters who are critical and proactive with innovative offerings in the modernization of ICTs in the service of health and education.



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Contents

Models of services in the national health system.

Theoretical Foundation - Conceptual and Telemedicine Technique / Telehealth at the level of the different fields of expertise of Medicine

Basics of Telemedicine / Telehealth: Uses and Innovations in the Field of Medicine - Application of Engineering-

- Historic Elements
- General definitions
- Basics of telehealth and telemedicine
- Definitions
- Standards and regulation

General models and architectures for Telemedicine

- Technologies for telehealth and telemedicine services Subnets
- Tele management
- Tele diagnosis
- Teleoperation
- Telemonitoring



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- Videoconferencing and legislation, ethical aspects.

Case Study by Specialty: Telemedicine / Telehealth.

- Projects at the Pan-American level.
- Telehealth organizations
- Regulation of Telemedicine Providers: Case study in Colombia

Expectations and Perspectives of Telemedicine / Telehealth in America and the world.

- Analysis of the situation of causal models in Latin America
- Complex models in health services and their relationship to telehealth services
- Health care, telemedicine and telehealth
- Scope of tele-health and telemedicine services
- Strategies to bring health services closer to users

Strategies

Pedagogical and Didactic Methodology:

Lecture sessions: The introduction of the different thematic nuclei will be made in lecture sessions in which students will have the opportunity to express their doubts and make contributions from their own perspective.

Individual work: Various activities will be considered throughout the course, in which the student will have the opportunity to apply the knowledge acquired in the lecture sessions.

Group workshops: Activities will be carried out by the integration of knowledge from the areas of expertise of the students (medicine and engineering), in order to optimize the applications in this field and promote interdisciplinarity.

Research seminars: In these the students will analyze publications in which methodologies studied in class have been applied either in academia or in the practice field.



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Type of course	Hours			Hours professor/week	Hours Student/week	Total Hours Student/semester	Credits
	DP	TC	IW	(DP + TW)	(DP + TW +IW)	X 16 weeks	
Elective	60	30	102	90	192	192	4

Direct Presence Work (DP): Classroom work in the lecture sessions.

Specific work by teams (TW): Teamwork by advisory of the professor.

Individual work (IW): Student work without teacher presence, which can be done in different instances: in workgroups or individually, at home or in library, laboratory, etc.

Resources

Each of the proposed resources will be described below in accordance with the model to be met:
Media and aid Access to bibliographic data networks arranged by the University: Virtual Classrooms:
-Access to the virtual classroom for workshop development.

Institutional Mail

Leap0763@gmail.com

medicina@udistrital.edu.co

Portal Web Institucional (PWI): <http://comunidad.udistrital.edu.co/hzuniga/> o <http://www.udistrital.edu.co/wpmu/> Para registrarse y crear un PWI ir a: <http://comunidad.udistrital.edu.co/wpsignup.php>

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De Sanctis, M., Rossi, T., & Ruggieri, M. (2012). Hybrid Satellite/ Terrestrial Telemedicine Services: Network Requirements and Architecture. International Conference on Communications (ICC) (pp. 10-15). IEEE Computer Society. Kowalczyk, M., Jara, A. J., & Skarmeta, A. F. (2012).

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IEEE Computer Society. Li, L., Yang, H., Su, H., Cao, Y., & Zheng, S. (2011).

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Magazines

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R. M. Durón, N. Salavarría, H. Hesse, A. Summer, and K. Holden, “Perspectivas de la telemedicina como una alternativa para la atención en salud en honduras,” vol. 5, p. 7, 2016.

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Schedule

It is recommended to work one unit every four weeks, work in small groups of students, use of Internet (virtual classroom, institutional mail, institutional web portal, among others) to communicate with students to review progress and answer questions (last two activities must be done in teamwork hours).

Week/unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. CAM unit	■	■	■	■												
2. Models					■	■	■	■								
3. Services							■	■	■	■						
4. Strategies and technologies											■	■	■	■	■	■

Grading

Grading will be done as follows

First grade	Activity	Date	Weight
	Exam 1	Week 4	25%
Second grade	Classwork assignment 1	Week 6	20%
Third grade	Case study	Week 12	25%
Fourth grade	Pocket global test and classwork assignment 2	Week 18	30%