



University of Nairobi

School of Computing and Informatics

Annual Report

2011

1. Introduction

The School was formally established in 1977 as the **Institute of Computer Science**. ICS mandate included academic as well as provision of university-wide ICT services.

In the year 2002, and in the interest of realizing more focused management and efficiency of the two functions, ICS was split into two entities, namely, **ICTC** and the **SCI**.

The School of Computing and Informatics (SCI) takes its name from the core competencies that it seeks to nurture: *Computing*, to cover the theory and science of computation and *Informatics* to exemplify the practical outworking of this theory in technology and application.

SCI is a regional leader in research, research and development (R&D) and advanced education in computing. It was the first to offer degree, postgraduate diploma and postgraduate degrees in computer science in the region.

The core mission areas are: Research, Teaching and Learning, Consultancy, Research and Development and Extension Services

Core SCI Activities

The School is charged with Teaching and Research activities relating to Computer Science.

Research

This is the primary activity of the School of Computing and Informatics, upon which success and quality of all other activities hinge.

Teaching and Learning

Our objective in teaching and learning is to produce high quality, well-rounded, sophisticated graduates who are productive, innovative, and capable of lifelong learning. Our courses are therefore developed and delivered to a high standard of educational and technological competence.

Consultancy

A number of our academic staff members are involved in consultancy work through UNES.

Extension & Community Out-reach

The School is involved in extension services to the community e.g. Kenya School for the Blind.

Thematic Areas

Research and teaching at the School is conducted within and across three established thematic areas:

- Distributed Systems
- Intelligent Systems
- Information Systems

2. Teaching and Learning

<i>Programmes</i>	<i>Year Started</i>	<i>Outlook</i>
B.Sc. Computer Science, Diploma in Computer Science	1994	This is the School's flagship programme. Continues to attract high caliber students. In the last two years we have admitted a second class at Kenya Science campus in addition to the class based in Chiromo campus. Curriculum has been reviewed 3 times. Most recent review in 2010.
M.Sc. Information Systems	1998	This is an evening programme. Mode of study is coursework and project. Continues to attract students with typical intake of approximately 40. Syllabus has been reviewed twice and another review is in process..
M.Sc. Computer Science	2006	This is an evening programme targeting applicants with first degree in Computer Science or related field. Mode of study is coursework and project. It continues to grow in popularity with typical intake of approximately 55.
M.Sc. Applied Computer Science	2003	This is a regular programme. Mode of study is one semester of coursework and a major R&D project.
Ph.D. Information Systems, Ph. D. Computer Science	2000	These are Ph.D. purely by research. The programmes have graduated 3 students so far. Currently 13 students are registered.

2.1 Undergraduate Enrolment

Year of study	Number of students								
	Government sponsored			Privately sponsored			Totals		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	31	8	39	34	7	41	65	15	80
2	36	7	43	49	11	60	85	18	103
3	27	9	36	38	13	51	65	22	87
4	25	4	29	13	5	18	48	9	57
Total	119	28	147	134	36	170	263	64	327

2.2 Postgraduate Enrolment Masters Programmes

Year of study	Number of students						
	M.Sc. Computer Science			M.Sc. Information Systems			Total
	Male	Female	Total	Male	Female	Total	
1	44	11	55	42	6	48	103
2	10	3	13	10	1	11	24
Project	57	5	62	33	8	41	103
Total	111	19	130	85	15	100	230

Ph. D.

Stage	Number of students						
	Computer Science			Information System			Total
	Male	Female	Total	Male	Female	Total	
1	9	1	10	3	0	3	13
2	3	1	4	1	0	3	7
3	4	0	4	0	0	0	4
Total	16	2	18	4	0	5	24

3. Number of Graduands

Programme	Number of graduands		
	Male	Female	Total
Diploma Computer Science	42	9	51
B.Sc. Computer Science	27	7	34
PGDip. Information Systems	-	-	-
M.Sc. Information Systems	39	4	43
M.Sc. Computer Science	31	5	36
M.Sc. Applied Computer Science	1	-	1
Ph.D.	-	1	1
Total	88	35	166

4. Research Projects

Title	Funding
Regional mobile applications Lab	World Bank Infodev
Poverty and Information & Communication Technology Systems in Urban and Rural Eastern-Africa (PICTURE Africa)	IDRC
ICT and Local Governance	IDRC
ICT Sector Performance Review – Evidence based ICT Policy making and	IDRC

Regulations	
Software Development Sub-Contracting and Usability Lab	Nokia Research
Nairobi Sizzle – Social Media user research	
Liberation Technologies Program – Design Thinking : Topic “Access to health care by low income communities”	Nokia, Stanford University
Utilities for Blind and Visually Impaired Persons – Research and Development	ICT Board
Mobile Application Development Course for Spurring Technological Growth	Google, Inc.
KORDA (Kenya Oncological Research Database)	
Developing Online Language Technology Resources for Igbo	Ford Foundation
Real-time, Farmer-centric M&E platform	NCST
Diasporas and Distributed Computing: Towards UoN Center of Excellence in Distributed Computing and Modeling	UNESCO, Hewlett-Packard

5. Publications

<i>Authors</i>	<i>Title</i>	<i>Place & Date</i>
T.K.Omwansa	Impact of mobile money product mpesa has on Kenya	Manuscript march 2011
Prof. T waema	Development strategies for the implementation of ICT Value proposition	A conference paper March 2011
Dr. Omwenga et'al	A Framework for Distributed Learning Objects Repository in Developing Countries	August 2011, Book (ISBN 978-3-8383-7917-3
Dr. Omwenga	Modeling a computer-mediated learning Infrastructure: Concepts, Principles & implementation requirements.	2011, Book (ISBN 978-3-8454-0858
Dr. Wagacha	Exploring the SAWA corpus: Collection & deployment of a parallel corpus English-Swahili	Book Chapter,2011
Dr. Wagacha	“Livestock diagnostic support system for rural pastoralists communities in Kenya”	11 th August, 2011, Conference paper
Prof. Waema T.M.	Local governance and ICT in Africa: Case studies and guidelines for implementation and Evaluation	2011, Book (ISBN 9768-0-85749-032
Prof. Waema T.M.	1.Development Outcomes of Internet and Mobile Phones use in Kenya	2011, Journal article, Info. 14(3) 110-124
Dr.Nganga et al	TparvaDB:a database to support Theileria parva vaccine development	Jnl of Biological databases and Curation,Oxford University press

Undergraduate Projects

Second Year Projects
M-Chonjo: A Mobile App for Reporting Incitement
Matatu Parcel delivery Alert System
An Automatic Resume (CV) Ranking & Filtering System
Interactive m-Kitchen helper
A Dinner Management System
Online workload Distribution System for University Departments
Dynamic Mobile Farmer Querying System
Social Development Cooperative (Chama) Management System
SCI Research Project
Online Tourism Booking and Reservation System
Web-Based Windle Trust School Management Information System
Mobile Ticketing System (Mobicicks)
Kipande pap
Integrated E-Advertising
Cafeteria Electronic POS System
Product Barcode Verification Application
Health Informatics Association WebSite
Mobile-based Medication Monitoring Application
Self-Help Group Management System
Radical Finance Savings Deposit System
SuperRider Bus Ticketing System
Matatu SACCO System
Online Self_Help Group Management Utility
Mobile Disorder Look-up: DROID-DOC
Electronic-Sports Club Management System
Online Food Ordering
Online Job Seeker
Mobile Minesweeper
M-Pesa Summary tool
Online University of Nairobi BookStore
Online Course Evaluation System
People Leaving with HIV/AIDS Health Care System
Translationary
Online Petrol Station Inventory management system
Optical Centre Management System
The Online Advertiser
Real-Time Crime Response Via Mobile Phone
Dynamic Web-Based Events and Entertainment Guide

Interactive Mobile Wireless Messaging
Online BookStore
Insurance Quote App.
Online Postage stamp
Estate Management System
Online Job application for University of Nairobi
Staff appraisal system
Matatu SACCO Car Hire and Bus Tracking System
Online Water Billing
Online Hotel Booking
Student Loaning System
Remote Supermarket Shopping
Online Business Management System
Knowledge_Based Techno-Medicine System
SMS-Based Market Management System* or Mobile Bureau System
Mobile Messaging Application
Mobile Phone Remote Ordering System
Health Informatics Association Website
SMS-Based Results & TimeTable Checker: Mobi-Result
M-Pesa Standing Order Application
Web-Based Residential Property Finder
Staff Timing System
GynecoM Kit
Online Hotel and Travel Booking System
The mStockQuote Mobile Application
Social News Aggregator
Online Group-Buying System
Blood bank Inventory Management System
Online Tours and Travel Booking Engine
Online Tours and Travel Booking Engine
Land Search System
Sugar Solution System
Doctor's Online Database
Mtumba Information Online
Online Job and Internship Seeker: Employ
Automated Courses Information System
e-Electronix Entertainment Shop
Rongai Hospital Automation system
Bipa Boutique Management system
Online Entertainment Site

Online Airline Reservation System
MyStock: The Stock Market simulator
Rental House Management System
Fulusi, The Financial Advisory System
Online Insurance Services: Case of e-Cover Insurance Company
Road Accident Response Engine
Mobile Application for Gabbage Collection
Web-based Voice Response Application
Web-based Kilimo and Wekeza System
Sales Analysis and Optimization System [Resubmission]
Online University Voting System
SMS Checker for Counterfeit Drugs
Gym Management System
Final Year Projects
Intelligent Back Up System For Important/Private Text-Messages
Generic Mobile Phone Monitoring And Evaluation Framework With Gps Mapping
A Generic Platform To Extend Access To Information On Markets For Farm Produce: A Case For Aquaculture In Kenya
Building Security System Implementing Face Recognition
Livestreaming Of Kenyan Roads Online
Gis Based Community Health Tracking And Management
Online Shopping With Retail Store Affiliation
Mobile Client-Server Trading Floor : A Case Study Of Kace
Gis-Based Road Accident Analysis System
Tengeza – An Ecommerce Platform For The Informal Jua Kali Sector In Kenya
Rural Drug Monitoring System
Enhanced Task Scheduling In A Grid System Using Ant Algorithm By Using Condor Framework
Intelligent Matching For Adoption Agencies
Expert Systems For Livestock Farmers With Gis Mapping
The M-Soko! Service – Into Real Time Dissemination Of Farm Produce Data Interfacing The Farmer With The Market
An Implementation Of An Extension Of Carrier Sense Multiple Access With Collision Avoidance (Csm/Car) Protocol In The Opnet Simulator
Hypermarket.Com
Genealogy Web Portal
Location Based Advertising Via Gps
Envirosys - An Aid To Environmental Impact Assessment
Web-Based Decision Support System In Education
Equity Management System
Integrated Citizens Data Portal

Sukari Plus: A Case For Outgrower Sugarcane Farmers In Mumias Sugar Zone
Insulin And Non Insulin Diabetes Detection And Control
Sms-Based Classroom Interaction System
Crisis Management: A Crowd Sourcing Approach
Personal Computer Authentication Using Facial Recognition
Super Online Shopping And Delivery
Online 3d Virtual Environment
Monitoring And Evaluation System For Hiv/Aids In Kenyan Slums
Mobile Phone Directory
Mobile Application

Postgraduate projects (Publications)

MSc. Students Projects
Designing a Real time Train Control and Monitoring System
Electricity load forecasting model
Continous Auditing Support Using A Multi-Agent System
The Adoption Of Electronic Publishing: A Case Study For Kenya Publishers
Towards An Enterprise Architecture For Road Transport Administration In Kenya
Impact Of Performance Contracting On Implementation Of E-Government Projects
Livestock Diagnostic Support System For Rural Pastoralist Communities In Kenya: A Prototype
A Forestry Decision Support Linked With An Expert System For Raising And Management Of Grevillea Robusta Tree Species In Kenya
Citizens Readiness For E-Voting In Kenya: Nairobi County
Framework For Ict Integration In Teaching And Learning In Public Technical Training Institutes In Kenya
E-Projecttracker: A Web Based Integrated Project Tracking System (Ipts) For Constituency Development Fund (Cdf) Projects In Kenya
Open Source Spell Checker For Luhya
The Challenges Of Implementing Content Management System In Higher Education Sector In Kenya.
A Framework For Knowledge Management Of Wildlife Research
Framework For Digital Forensics For Kenyan Courts Of Laws
A Framework For Investigating Mobile Banking Acceptance In Kenya.
The Road To Green It; A Framework For Realizing Green It In Kenyan Organizations
Enhancing E-Government Models Through An Integrated Email And Sms-Based Information Systems
Handoff effects on network capacity and quality of service in voice mobile
Agent-Based Remote File Locator In A Virtualized Environment
Process Mining & Process Modeling In Semi Structured Information Systems
Name Entity Regonizer And Part Of Speech: Case Study Of Kamba
Mobile Social Networking – A Mobile Phone & Twitter Integration Application.
Data Mining Demystification In Our Local Markets

Security As A Service Framework For Broadband Users
Personalized Agent Based Adaptive Learning Model Deployed Under Intermittent Internet Connection Conditions
Biometric Model For Online Verification Of A Large Client Base.
Policy Based Enterprise Network Quality Of Service Provisioning: Performance Assessment
automatic assessment of online discussions
Use of Concept Map Scaffolds in Adaptive E-Learning

6. Conference papers

<i>Authors</i>	<i>Title</i>	<i>Place & Date</i>	
Prof. T waema	Development strategies for the implementation of ICT Value proposition	A conference paper March 2011	Bellagio Study and conference,Italy 24 march 2011
Prof.Waema and Meoli kashorda	ICT Indicators in Higher Education:towards an E-Readiness assessment Model	Ubuntu Net Connect 2011	24-25 Nov,2011
Prof. T.M.Waema and Okinda O	Policy implications of the Relationship Between ICT Access and Usage and Well-being:A case study of Kenya in <i>African Journal of Science, technology, Innovation and Development(AJSTID)</i> ,3(3),31-62		Dec 2011
Prof.T.M.Waema, D.O.Ochieng and Onsomu,JO	Mobile Interfaced Crops Dignosis, Expert System(MICDES); A Case for Rural Kenyan Farmers in Int. J. Services, Economics and Management,Vol.4, No. 1,pp4-26	Mobile Interfaced Crops Diagnosis	Oct 2011

7. Conference Attendance

<i>Staff</i>	<i>Conference</i>	<i>Place & date</i>
T.K.Omwansa	Bellagio Study and conference	24 th march 2011.Italy
Prof.waema	1.Research methodology workshop 2. 5 th Annual e-Government Africa Forum 3. developing strategies for the Implementation of Kenya ICT value proposition	- 18-19 oct 22011,Adis Ababa University - 24-28 th April,Hilton Hotel,yaounde,Cameroon - 13-19 march 2011,Bellagio study Conference center Italy
Dr. P.W. Wagacha	Sizzle International Workshop	16-18 august 2011,Helsinki Institute for Information technology,Helsinki,Finland
Dr. Wagacha/ Nganga Mr.Muchemi	African Network for Localization (ANLoc)	21-23 february 2011,Masai lodge,Kenya

Dr.Wagacha,D.Orwa,Sci Staff and students	Social Media User studies	18-20 th January 2011,Chiromo,SCI labs
J.Ogutu/Smburu	IST-Africa Framework programme 7 Workshop	18 March 2011,Nairobi Kenya
S.Mburu	Nokia kenya 14 weeks Java training	Jan-March 2011,Nokia Office,Nairobi
E.Opiyo/Eayienga	UNESCO and Hewlett Packard	March 2011, South Africa
P. Wagacha/E.Opiyo/ L Muchemi	Intra-ACP academic mobility programme	3-4 march 2011, Crown hotel ,Upper Hill Nairobi
Prof.T M waema	Facilitated a Strategic Planning Workshop and reviewed the strategic plan of the College of agriculture and Vetrinary services, university of Nairobi.	3-4 Nov 2011 KCBLeadership Training Center,Karen
Mr.Ogutu	LIWA-ICT sector Borad Conference	24-25 Nov, 2011 Laico Regency Hotel, Nairobi
Ms Muthoni Masinde	ITU Green ICT Application Challenge	October 2011 Rome, Italy
Eric Ayienga	1.Short Research stay(SRT) Visit 2.Grid Computing in the framework of the UNESCO-HP Brain Gain Initiative	- Nov 7 2011-3 rd Feb 2012 Free University of Brussels, Belgium - 22-26 march 2011 Pretoria South Africa
P.Wangunyu	Scientific Writing and Communication	9-13 Sept. UON, Chiromo
Mrs. Muthoni Masinde, S.N. Mburu, P. Rabala, R. Oboko	Workshop On Applications Of Wireless Sensor Networks For Weather Monitoring In East Africa	July 6-8, 2011 Corporate Lab , School Of Computing
Dan Orwa, P. Waiganjo, S.N. Mburu, R.Oboko	Liberation Technologies- Design thinking	July 18-22, 2011 Corporate Lab , School Of Computing
Prof. Okello Odongo	Workshop IEEE by LEWA	July 2011 KICC
Michael Anindo	KeFA Grant Proposal writing Course	August 1-12, 2011 School of Computing- Computer Labs
E.A Miriti	UNITID fellowship Training- Information Security & audit	15-19 th August School of Computing- Computer Labs
Dr. Omwenga	Training on ICT in Education	August 2011 Science Boardroom
T.Omwansa	Conference & Training	12-16 September, 2011 Nigeria
Dr. P. Wagacha	Human language Technology for Development(HLTD) Conference	2-5 May 2011 Alexandria Egypt
Dr.Wanjiku Nganga	Human language Technology for Development(HLTD) Conference	2-5 May 2011 Alexandria, Egypt

Dr. Wanjiku Nganga	Google EMEA Faculty Summit 2011	10-13 May 2011 Zurich, Switzerland
Dr. Ng'ang'a	First regional workshop on electronic healthcare & telemedicine	28 th -29 th July 2011 K.I.E
Dr. Wagacha	First regional workshop on electronic healthcare & telemedicine	28 th -29 th July 2011 K.I.E
T. Omwansa	Scientific communication & publishing (Training Centre in Communication)	15 th August 2011 Chiromo Campus
Mr. Joseph Ogutu	Curriculum writing Workshop for Masters in Computer Education	14 th – 16 th July 2011 Strathmore University
Prof. Okelo-Odongo	Workshop for the Academic Division	4 th – 7 th August 2011 Midland Hotel - Nakuru
Mr. Christopher Moturi	AIBUMA 2011 Conference (Theme: "Building Synergies for Better Performance")	25 th – 26 th August 2011 KICC, Nairobi
Stephen N.Mburu	Workshop On Applications Of Wireless Sensor Networks For Weather Monitoring In East Africa	July 6-8, 2011 Corporate Lab , School Of Computing
C.Moturi	A Framework for Knowledge Management of Wildlife Research	August 25-26, 2011 African International Business and Management Conference, Nairobi
Prof. Okelo-Odongo	BPO/ITES Workshop	21 st – 22 nd September 2011 Silver Springs Hotel

8. Collaborations

Title	Partners	Staff Involved
Research and Development Cooperation	Kenya Data Networks (KDN)/SCI	Dr. Ng'ang'a/Mr. Ogutu
Open Source Moodle E-learning Project	Google /UON	Mr. Muchemi/Mburu/Prof. Okelo-Odongo
MIT's-Africa Internet Technology Initiative(AITI) Summer programme	UON/MIT	Dr. Wagacha/Muchemi/Mr. Mburu
Subcontracting Capacity Building Project	Nokia Research Africa (NoRA)/SCI	Dr. Waiganjo/Mr. Orwa/Oboko/Prof. Okelo-Odongo
UNESCO – Hewlett Packard Project	UNESCO, University of Nairobi & Hewlett Packard	Prof. Okelo Odongo, Mr. Elisha Opiyo, Mr. Eric Ayienga, Miss Christine Ronge
Bournemouth/UoN Collaboration	Bournemouth University & University of Nairobi	Dr. E.I. Omwenga
Canadian Government Scholarship	Simon Fraser University, DFAIT (Canadian Government), SCI	Muchemi L. Githiari
University of Cape Town, South Africa	Hasso Plater Institute	C.K. Chepken
Mobile Learning for Rural Pupil	ICT4D	T. Omwansa
Social-Economic Impact of Mobile Cash	Rockefeller	T. Omwansa
Research & Engineering	Africa-Asia Collaboration	A. Kahonge
Japanese Government (Monbukagakusho) Scholarship	Graduate school of engineering at Nagoya University Japan	Elisha Abade

Mobile Applications	Infodev	Prof. Okelo-Odongo/Dr. P. Wagacha
Social Media-Nairobi Sizzle	SCI/Nokia Research Centre Africa/Helsinki Inst. Of Information Technology	Mr. D.O. Orwa/Dr. P. Wagacha
“Design Thinking”Liberation Technologies	Stanford University/Nokia/SCI	Dr.Wagacha/D.Orwa
IBM Mobile Application development project	IBM/SCI	Prof.Okelo-ondongo/

9. Consultancies and Outreach

UNITID Fellowship health Information	Center for Disease control	SCI Staff
E-Content Development	Longhorn Publishers	Mr.Mburu
Strategic plan for ICT	Ministry of Home Affairs, Tanzania	Waema
Supervisor/Assessor for KNEC 9-11 Nov 2011 Kisumu Polytechnic	Kenya National Examination council	J.O.Ogutu
Reviewed the strategic plan of the college of biological and physical sciences	CBPS	Prof.T M Waema
Appointed as Council member of the Mombasa polytechnic, University College(Prof.Waema
Appointed as a member of the Task force on the Alignment of the Higher Education, Science and Technology sector with the Constitution	<i>Ministry of education</i>	<i>Prof Waema</i>

10. Other Activities

Activity	Dates/Venue	Staff Involved
SCI Seminars	Every Wednesday	All SCI Staff
Workshop On Applications Of Wireless Sensor Networks For Weather Monitoring In East Africa	July 6-8, 2011	E.Masinde/S.Mburu/R.Oboko/P.Rabala
Liberation Technologies- Design thinking	July 18-22, 2011	Dr Nganga/Mr.Mburu/Ms Ronge/Mr.Rabala/Mr.Anindo
SCI Open day	22July 2011	All staff/Students SCI (See photos attached)
Task force on alignment of the Higher Education, science and Technology Sector with the Constitution	Sept 2011	Prof. T. Waema
Center for Excellence in BPO/ITES training		Prof Okelo-Odongo/Dr Nganga/Dr Omwenga
Verification of Academic Resources-Kenya Methodist University		Prof.Okelo-Odongo
External Examiner	Jomo Kenyatta University	Prof. Okelo-Odongo
Research strategy retreat	March 2011 Maanzoni Lodge	SCI academic staff
SCI staff team building	22 nd June 2011 Maasai Ostrich farm, Kitengela	Non academic staff (See photos attached)
External Examiner	Moi University	Dr. Omwenga

11. Resources
Human resource

<i>Establishment Position</i>		<i>No of posts</i>	<i>No in post</i>	<i>Difference</i>
<i>Designation</i>	<i>Grade</i>			
Professor		3	0	3
Associate Professor		3	2	1
Senior Lecturer		6	4	2
Lecturer		9	12	3
Tutorial Fellow		3	4	1
Assistant Registrar	lecturer	1	0	1
Senior Administrative Assistant	EF	1	1	0
Admin Assistant	E	2	0	2
Senior Secretary	D	1	1	0
Assistant secretary	C	1	1	0