

# **POLICY FOR DEVELOPMENT AND USE OF OPEN EDUCATIONAL RESOURCES (OER)**



**KWAME NKUMAH UNIVERSITY OF  
SCIENCE AND TECHNOLOGY (KNUST)  
Kumasi, Ghana**

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## **PREFACE**

The mission of KNUST is to provide an environment for teaching, research and entrepreneurship training in science and technology for the industrial and socio-economic development of Ghana and other nations. The university is therefore committed to dynamic knowledge generation, leadership in innovation and technology and a culture of excellence. It is on this premise that KNUST has embraced the concept of open educational resources and its use in higher education. Open Educational Resources (OER) are teaching, learning and research resources available for free access and use with no or limited restrictions.

KNUST envisions that it will be a leading developer of OERs while the use of its own as well as other OERs will become fully incorporated into teaching and learning at all levels within the institution to further ensure that the highest standards of education are achieved. This policy therefore guides the promotion, development and usage of OERs within all colleges and departments of KNUST.

To ensure smooth take off of the OERs at KNUST, the ICT Directorate has been strengthened with both human resources and equipment. The university ICT infrastructure is supported by fibre optic backbone and internet bandwidth of 45Mbps to facilitate improved and efficient access throughout the university campus.

KNUST shall work at providing an efficient intranet system with wider coverage within the university territory including the non-residential student areas, to cut down on bandwidth usage using wireless technology, for complete deployment of the OERs. The local intranet should provide a platform for distribution of OER materials to students or faculty members who wish to use them. The IT network will be continuously upgraded to support the OER website that would share selected materials on the World Wide Web. The effective implementation of the university's ICT policy also is expected to augment this OER policy.

**Professor William Otoo Ellis**

**Vice-Chancellor, KNUST**

**April 2011**

## **ACKNOWLEDGEMENTS**

This policy is a natural evolution of the development of OERs at KNUST (and at the University of Ghana). KNUST acknowledges the assistance of Dr. N. Cary Engleberg and Dr. Lynn Johnson from the Medical and Dental Schools (respectively) of the University of Michigan (UM) in facilitating this process. KNUST is also grateful for the financial support granted to the scholars by the Hewlett and Gates Foundations to assist with the development of e-learning and OER at KNUST and the University of Ghana. To achieve this noble mission Dr. Engleberg took a year's sabbatical leave as a Visiting Professor in the Department of Clinical Microbiology at the School of Medical Sciences of KNUST; special appreciations for this academic friendship.

KNUST is grateful to the College of Health Sciences for leading the process of developing this policy and the numerous personnel engaged from the various units within the university. Specific appreciation goes to the Committee members for developing and drafting this policy: Dr. Ohene Opare-Sem (Chairman) of Internal Medicine, College of Health Sciences (CHS), KNUST; Dr. Eric Woode of Pharmacology, CHS, KNUST; Ms. Nadia Tagoe of the Office of the Provost, CHS, KNUST; Mr. Adam Rahman of Communication Design, College Arts and Social Sciences, (CASS), KNUST; Mr. Abednego Corletey of KNUST Library; Mr. John Serbe Marfo, KNUST Webmaster; Ms. Veronica Okyere of Quality Assurance Unit, Komfo Anokye Teaching Hospital (KATH), Kumasi; Mr. Samuel Aggrey-Smith of Institute of Distance Learning, KNUST; and Dr. Cary Engleberg University of Michigan (then Visiting Professor at CHS, KNUST).

Acknowledgements are also due the team involved in developing the first set of OER projects (as of August 2009) to set the scene for KNUST to become OER developer and user: Dr. Ohene Opare-Sem of Internal Medicine, KNUST; Dr. Richard Adanu of OBS-GYN, University of Ghana (UG); Dr. Akye Essuman of Family Medicine, UG; Prof. Yaw Adu-Sakordie and Mr. Charles Adjei Osei of Clinical Microbiology, KNUST; Prof. J. T. Anim and team at Pathology, UG; Dr. Francis A. Yeboah of Molecular Medicine, KNUST; Dr. Celice McDermott of Behavioural Sciences, KNUST; Dr. Richard Phillips and team at Internal Medicine, KNUST; Dr. Richard Adanu of OBS-GYN, UG; and Prof. Kwabena Danso of OBS-GYN (KNUST).

Special appreciation goes to Professor Peter Donkor, Pro-VC of KNUST, under whose leadership the project culminating in this policy was developed when he was Provost of the College of Health Sciences. Appreciation is expressed to the various committees of KNUST that worked on the draft document and approved its publication. Finally, Professor Samuel Nii Odai is acknowledged for editing the document and getting it ready for publication.

**Professor Samuel Nii Odai**  
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## **1.0 DEFINITION**

Open Educational Resources (OER) can be defined as teaching, learning and research resources available for free access and use with no or limited restrictions. The term "open educational resources" was first adopted at UNESCO's 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries.

## **2.0 BACKGROUND TO OER IN KNUST**

OER is a new paradigm for education at all levels. The Hewlett Foundation has played a pioneering and ongoing role in the development and use of OER with its support of many initiatives beginning with primary education and extending to the post-graduate level. The OER movement began in 2001 when the Hewlett and Mellon Foundations jointly funded MIT OpenCourseWare (OCW), and MIT became the first institution committed to making all of its course materials freely available. Since then, more than 60 additional institutions including Cambridge, University of Michigan, Tufts, etc. have launched OpenCourseWare websites. Though there is some caution on the part of many in accepting this new paradigm, more and more institutions are gradually embracing the OER model. Currently, electronic learning materials developed for local use at these institutions are being shared freely on the worldwide web.

The KNUST motto: "Nyansapo wosane no badwenmma" literally means that *the wisdom knot is untied by the wise child*. This motto conveys the idea that "A wise person has the capacity to choose the best means of attaining a goal." Being wise implies broad knowledge, learning and experience and the ability to apply such faculties to practical ends. This therefore signifies the willingness of the university to embrace innovative means of teaching, learning and research. KNUST expects that its engagement with OER will facilitate ongoing curriculum renewal, enhance the teaching and learning experience of students and educators, promote knowledge sharing and market the institution.

One such collaboration that enhances KNUST's mission in this direction is with the University of Michigan (UM). The KNUST-UM collaboration was strengthened during the visit of the UM President, Mary Sue Coleman in February 2008. The Ghana-Michigan CHARTER (collaboration between University of Michigan, KNUST, University of Ghana and Ministry of Health) became a lead milestone for OER development in Ghana. This created the impetus to encourage faculty exchange of educational materials for the development and propagation of electronic OER materials (See Appendix A for further details).

At almost the same time, the Hewlett Foundation awarded a grant to UM and four participating African universities in Ghana and South Africa (KNUST, University of Ghana, University of Cape Town and University of Western Cape) towards the development, use and sharing of Health OERs between the participating universities and also worldwide. As part of this Hewlett grant, OER Africa was also introduced to play an advisory role in helping the universities to navigate this process. UM, KNUST and OER Africa organized an OER policy workshop on 20<sup>th</sup> February 2009 and a two-day production workshop on 23<sup>rd</sup> and 24<sup>th</sup> February 2009 for KNUST faculty and non-faculty staff. The College of Health Sciences, spearheading the KNUST OER drive, led the process of developing this policy framework to guide the development and use of OER content. It is worth noting that KNUST is one of the first universities in Africa to implement OER in higher education.

### **3.0 PURPOSE OF OER POLICY**

The purpose of this OER Policy is to:

- guide the development and review of OER materials prior to sharing them on a worldwide scale
- clarify publication rights and licensing issues
- outline policies regarding the use of required infrastructure (information technology, library, etc.) and other support services
- identify human and other resources to support faculty in developing OER for teaching and learning
- define collaborations within and without the university and the intent to allow access

### **4.0 COPYRIGHT AND LICENSES FOR OPEN CONTENT**

The principles on which KNUST Copyright Policy are based are presented below.

#### **4.1 Faculty**

Faculty who originate material reserve the right to decide the conditions under which the material will be shared except in the following cases:

- The material is specifically paid for or commissioned by the university or the university provides an unusual contribution either financial or material. In this case, the university will determine the conditions under which the material will be shared.
- The material is developed as a result of a specific collaboration, in which case the guidelines governing that collaboration will prevail.

Materials produced which do not indicate any specific conditions for sharing will automatically be considered to have been shared under a Creative Commons Attribution license (See Appendix C).

## **4.2 Non-Faculty Staff**

Materials created by staff as part of their job responsibilities will be owned by the university unless they are the creative force behind the work and/or have made a substantial intellectual contribution. In that case the same guidelines that pertain to faculty shall apply.

## **4.3 Students**

This policy presumes that students will not be creators of OER material. Students who assist with creating or producing OER shall be acknowledged as collaborators. In the event that students are involved in developing OER as part of their university education, the authorship rights should fall to the University but the students will be appropriately attributed.

## **4.4 Types of Licenses**

KNUST has adopted the Creative Commons (CC) license scheme as its basis for sharing OER as it addresses various copyright issues and sharing options that have been identified. Creative Commons is a nonprofit organization that develops, supports, and stewards legal and technical infrastructure that maximizes digital creativity, sharing, and innovation.

Creative Commons allow authors, scientists, artists, and educators to easily mark their creative work with the freedoms they want it to carry, so others can share, remix, and use commercially, or any combination thereof. CC can be used to change copyright terms from "All Rights Reserved" to "Some Rights Reserved." The Various CC conditions are outlined in Appendix C.

## **5.0 PRODUCTION (AUTHORING), DELIVERY (SHARING) AND ACCESS**

### **5.1 Resources**

- There is a vast expertise in the University for Content Development so the university will identify and motivate faculty who are already involved in the OER process and encourage others to do likewise.
- Colleges, faculties and departments will be required to make budgetary allocations for the development of OER within their units. They will also be required to explore external sources of funding including grants and collaborations to roll out OER as a means of addressing existing curriculum needs.

### **5.2 Technical Assistance**

The following personnel will provide technical assistance for OER producers and users at the three main stages i.e. production, delivery and access.

Production: Media Specialists consisting of Graphic Designers, Web Designers and Editors

Delivery: IT Specialists

Access: IT Helpdesk Officers

See Appendix D for description of the above-named technical personnel.

### **5.3 Software/Hardware**

The university will provide software and hardware options that are suitable for OER producers and users where possible. Various colleges are required to provide hardware and software options for the development of OER at their respective colleges. Appendix E explores various schemes of procurement.

### **5.4 IT Network/Management and Infrastructure**

KNUST currently has an internet bandwidth of 45Mbps and this facilitates an improved and efficient access throughout the university campus (Appendix F).

In addition, KNUST will work towards providing a more efficient intranet system with wider coverage within the university territory including the non-residential student areas to cut down on bandwidth usage using wireless technology. The local intranet will provide a platform for distribution of OER materials to any students or faculty members who wish to use them. The IT network will support the OER website that shares selected materials on the World Wide Web. The effective implementation of the university's ICT policy will also augment this OER policy.

### **5.5 Role of Communication Design, ICT Directorate, Library, etc.**

The University encourages a teamwork approach to curriculum and materials development to bring together different kinds of expertise available across the university e.g. disciplinary, pedagogic, design, systems, ICT, etc.

The Department of Communication Design in the College of Arts and Social Sciences will play a foundational role in training faculty, staff and students engaged in OER in design and media related skills as well as provide the human resource to assist in the development of OERs. The ICT Directorate, the KNUST Library, the E-Learning Centre and all other relevant departments will support the design, development, review, sharing and storing of OERs.

### **5.6 Sharing**

KNUST will foster open sharing of educational materials with other Ghanaian institutions. This sharing policy will mandate the placement of OER materials produced at the University of Ghana

on the KNUST intranet, and the complementary placement of KNUST-developed materials on a similar site at UG. This policy will help avoid duplicative efforts and expand the base of materials for all involved parties. Eventually, this sharing policy can be extended to other institutions that promulgate OER.

## **6.0 REVIEW SYSTEM**

A department-based review mechanism will be established to clear OER content. At the College level, an OER Coordinator (in the absence of a Vice Dean for Education) will be responsible for the clearing of OER material. The OER Coordinator will oversee the dScribes and the entire review and clearing process. OER quality and legal concerns should be reviewed by dScribes before publication. At the university level, an OER Board will be created to review policy as well as the production, delivery and access processes of OER.

## **7.0 RECOGNITION**

OER production and publishing would be recognized and given similar credit (actual weighting to be decided by University Appointments and Promotions Committee) as peer-reviewed publications. The university would also allow time allocation for faculty to produce OER materials. Staff involved in OER publications would be eligible to receive OER grants (when available).

In order to facilitate innovation and motivation, the university will institute the organization of an periodic (annual) exhibition of OER materials from all colleges and departments, such as 'OER Day.' This will enhance the reputation of those departments that excel in OER production and make their accomplishments more visible to the university at large. In addition, the university can promote the OER culture by organizing certificate-awarding advocacy seminars, hands-on workshops, etc for faculty and staff.

## **8.0 LIABILITY**

All OER materials shared from the university to the world at large should carry a disclaimer indicating that the material is for educational purposes only and that the university absolves itself of any practical misuse of the OER materials or their content. OER materials authored and published by staff of the university do not necessarily reflect the opinion of the university. Medically-oriented materials should bear a warning indicating when sensitive materials are to be displayed, and a statement confirming that any images of patients were obtained with the expressed consent of those involved.

## **9.0 APPENDICES**

### **Appendix A: E-learning Collaborations in the Health Sciences at KNUST and UG**

The development of OER at KNUST (and at the University of Ghana) has been facilitated by the assistance of Drs. N. Cary Engleberg and Lynn Johnson from the medical and dental schools (respectively) at the University of Michigan (UM). Dr. Johnson is Associate Dean for Education at the UM School of Dentistry where she developed an electronic curriculum. She is currently involved in transmitting and adapting some of the Michigan content for use in Ghana. Dr. Engleberg is a Professor from the Departments of Internal Medicine and Microbiology and Immunology at Michigan who has developed e-learning materials for medical students and a complete electronic course in Medical Therapeutics that is a required part of the Michigan medical curriculum. Both of these scholars have been supported by grants from the Hewlett and Gates Foundations to assist with the development of e-learning and OER at KNUST and the University of Ghana. Dr. Engleberg exploited his sabbatical leave to spend a year in Kumasi as Visiting Professor in the Department of Clinical Microbiology at the School of Medical Sciences.

During the period from September 2008 to September 2009, Dr. Engleberg collaborated with faculty members from several departments at both institutions. The local faculty project leaders expressed interest in OER and proposed pilot e-learning projects in order to serve their own educational missions. Some of the projects are completed and have been distributed to students for their use. Others represent open repositories of e-learning content which are made available, but to which additional content will be added periodically.

## **Appendix B: OER Africa**

OER Africa was launched as an innovative new project, under the auspices of the South African Institute for Distance Education (SAIDE). This pan-African project is headquartered in Nairobi, Kenya, and envisioned to play a leading role in driving the development and use of Open Educational Resources (OER) within higher education across the African continent.

OER Africa was established in the firm belief that OER has a powerful positive role to play in developing and capacitating higher education systems and institutions across Africa. This conviction is matched by concern that – if the concept and practice of OER evolves predominantly outside and for Africa then – African higher education will not be able to liberate its potential for itself. Thus, OER Africa has been set up to ensure that the power of OER is harnessed by Africans for Africans by building collaborative networks across the continent. The premise of OER Africa is that it will facilitate the aggregation of information and human expertise that produces knowledge – an activity which can either be individual, or inter-institutional. Seed funding has been provided by the William and Flora Hewlett Foundation, a Foundation which has successfully supported the development of a number of open educational resources initiatives such as the MIT OpenCourseWare in the United States.

OER Africa's mission is to establish vibrant networks of African OER practitioners (institutions and individuals alike) by connecting like-minded academics from across the continent to develop, share, and adapt OER to meet the higher education needs of African societies. By creating and sustaining human networks of collaboration – face-to-face and online – OER Africa will enable African academics and higher education students to harness the power of OER, develop their capacity, and become integrated into the emerging global OER networks as active participants rather than passive consumers.

OER Africa's vision is one of vibrant, sustainable African higher education institutions that play a critical role in building and sustaining African societies and economies, by producing the continent's future intellectual leaders through free and open development and sharing of common intellectual capital.

Over the next three years, OER Africa seeks to respond to a clear set of specific problems faced by the higher education sector in Africa. OER Africa has already begun work in several key activity areas including institutional policy engagement, creation of collaborative networks, research into OER concepts and practice in Africa and the management and growth of OER Africa website.

([www.oerafrica.org](http://www.oerafrica.org))

## Appendix C: Open Licensing: Creative Commons License Conditions



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## **Appendix D: Description of Technical Assistance**

### **Production Stage**

#### *Graphic Designer*

The graphic designer (artist) will be a professional within the graphic design and graphic arts industry who assembles together images, typography or motion graphics to create a piece of design. The graphic designer will create the graphics primarily to be published for the purposes of the OER project. They may also be responsible for typesetting, illustration and web design. The core responsibility of the designer will be to present OER information in a way that is both accessible and aesthetic.

#### *Editor*

The Editor will be responsible for digital production of OER content with regard to checking copyright issues and other digital publishing related matters.

#### *Web Designer*

The Web designer will design presentation of content (usually hypertext or hypermedia) that will be delivered to an end-user through the World Wide Web, by way of a Web browser or other Web-enabled software like Internet television clients, micro blogging clients and RSS readers.

### **Delivery Stage**

#### *IT Specialist*

The IT specialist shall be a multifaceted IT person who has knowledge of information systems and is able to apply several IT technologies including software and web programming to deliver OER content as appropriate.

### **Access Stage**

#### *IT Helpdesk Officers*

The IT Helpdesk Officers provide support for hardware and software issues related to the OER. They will also handle phone support for the campus and help out with general support of the other staff in relation to the OER. The primary requirements for Helpdesk workers will be good interpersonal skills and a broad base of knowledge on computing.

## **Appendix E: Scheme for Hardware and Software Procurement**

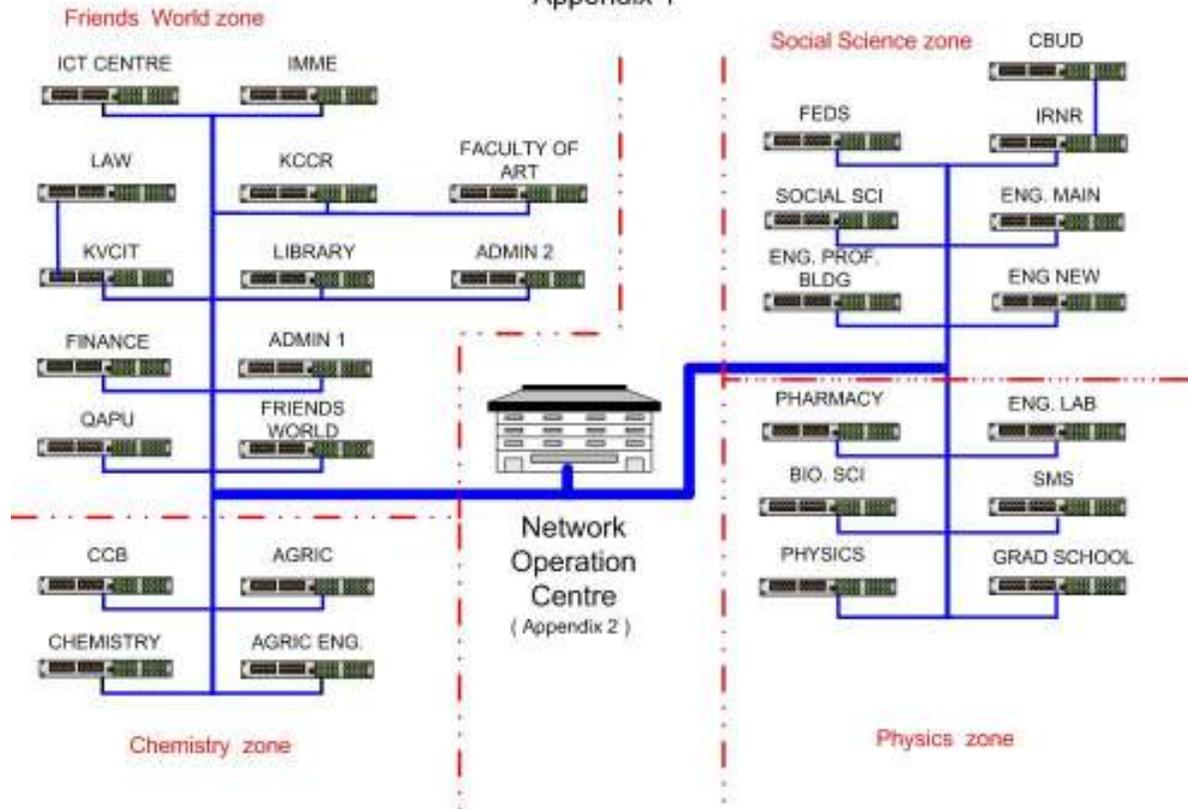
The success of OER will largely depend on the ability to disseminate and access the OERs. This means the availability of computers as well as an efficient and reliable network. With the current student numbers at the University, it recommends the following:

- Although KNUST will follow through with its usual plans for continuously improving the number of computers for students use, it will not be saddled with the burden of acquiring extra computers solely for OER access. This will also eliminate the need to maintain such machines so acquired.
- Colleges, faculties and departments should develop their own schemes for procuring hardware and software through their own resources or external support. The university will support the Colleges when deemed necessary.
- KNUST may negotiate with Computer or Software manufacturing Companies – not their agents – to supply laptops and PC computers or software with basic specifications to students and staff at much reduced prices for educational purposes (most of the manufacturing companies have special prices for educational institutions and KNUST may take advantage of such arrangements).
- KNUST may petition the Ministry of Education to allow such computers to come into the country as duty free educational materials, to further reduce the cost for students and staff of KNUST who will wish to acquire a computer or software to be able to pursue their education using OERs.

## Appendix F: Network Architecture of KNUST

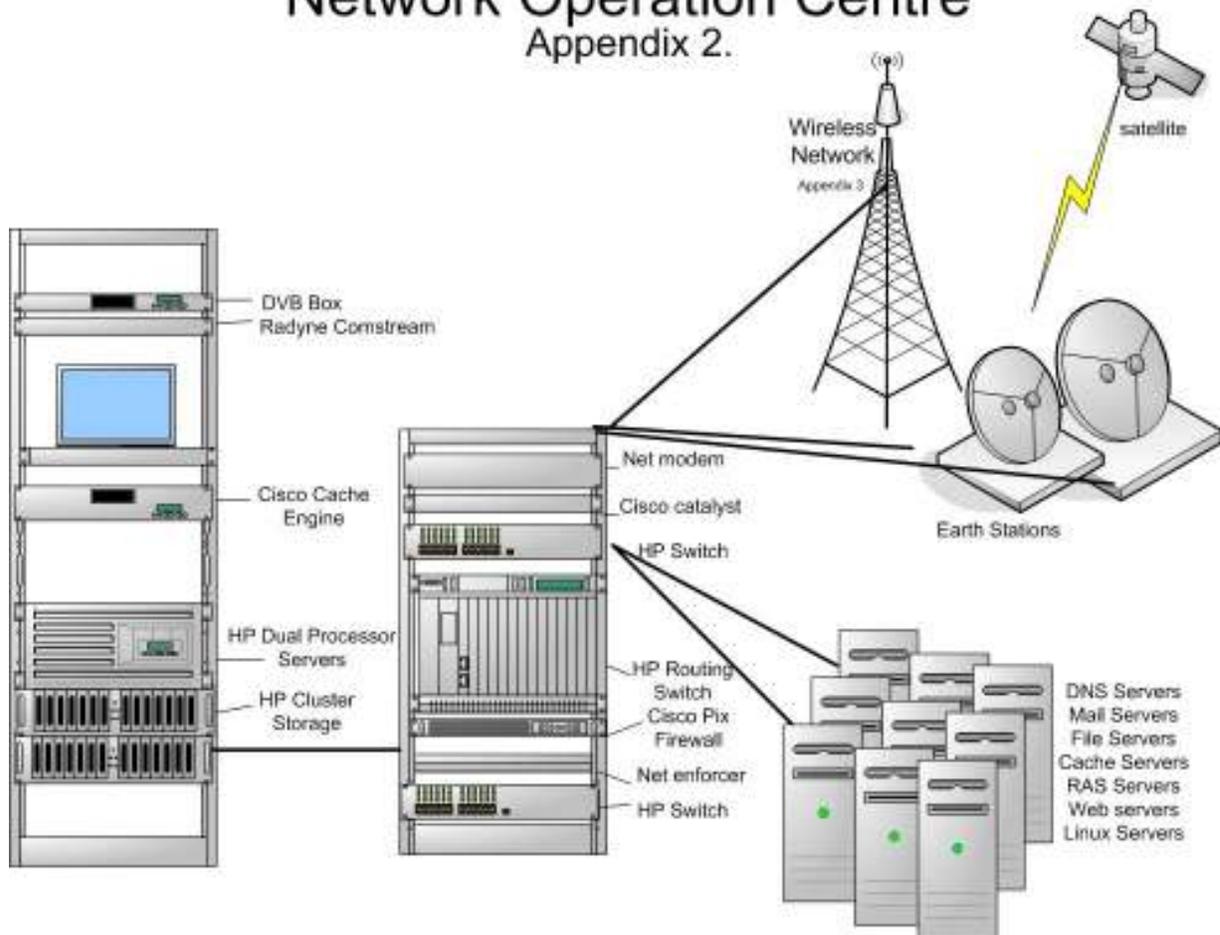
# Fibre Optic Backbone at KNUST

Appendix 1



# Network Operation Centre

## Appendix 2.



# Topology of Wireless Area Network for KNUST

## Appendix 3

