

# HiLCoE

School of Computer Science & Technology

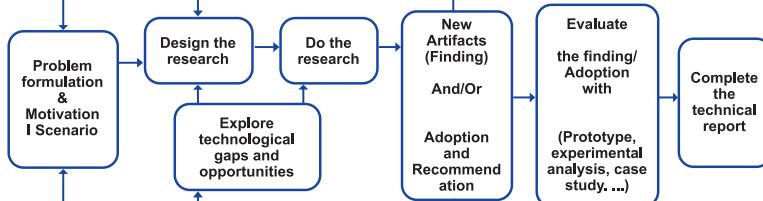
**BSc. in Computer Science**  
**MSc. in Computer Science**  
**MSc. in Software Engineering**  
**and others**

## Graduate Programme Research Office

### The Research Process at HiLCoE



#### Real World Application, Context and Environment



#### Computer Science and Technology

May 2018

# Introduction

**HiLCoE**, is a pioneer private higher education institute in the country, was established in 1997. It is a specialized Computer Science and Technology College that adheres with the vision to be **Center of Excellence in ICT Education, Research and Development (ER&D)**. It is now widely accepted that **HiLCoE** prepared students to become industry and academic leaders who can apply technology and computer science principles across a wide variety of fields. It always gives opportunity for the citizens to be superior in qualification and best fitting to this competitive world of knowledge economy.

The two pioneer Masters Degree programmes offered on top of the **B.Sc. Degree in Computer Science** programme are **MSc. Degree in Computer Science** and **MSc. Degree in Software Engineering**. The Bridging Scheme of Computer Science courses is designed in order to qualify non-IT related bachelor degree graduate applicants to join the Master's programme. **MSc. in Information and Computer Security, MBI - Master of Business Informatics and BSc. in Information Systems** are in progress to be launched.

The curricula are designed and keep on reviewing to inculcate the essence of science and technology to fill the gap and inspire the students' vision to be a choice for world class quality education, applied research and housing off-shore software development. Its underlying philosophy is to focus on the scientific and engineering foundations which is hoped to ensure that graduates remain productive with the pace of technology and business agility.

Therefore, the graduates are targeted to fill the gap of human resource needs for the development of the country at large. Hence, respective curricula are designed to produce graduates who can fill the gap as educators, policy and academic advisors, Business and IT managers, researchers in the industry and academia environment and IT specialists.

The maturity attained as a result of long years of the knowledge base services has come to the level of huge database of scientific findings, research works, software applications, articles, best practices and case studies that touches several spectrum and paradigm. To this effect, **HiLCoE Journal of Computer Science and Technology (HJCST)** is peer-reviewed bi-annual media publishing articles to disseminate and preserve the research outcomes of research students and scholar-practitioners.

In addition to its educational activities, the college's sister company undertakes IT & Business consultancy, The focused on Enterprise perspective Business and IT Solution & Strategic Architecture, IT security policy & implementation, Cloud computing, Data Center, Mobile application, Web service and application architecture, Research and tailor-made courses.

## Master of Science in Computer Science (MSCS)

The Master of Science in Computer Science Programme provides intensive preparation in the concepts and techniques related to programming, design, and application of computing systems. The programme requires students to take a broad spectrum of courses, while simultaneously allowing for emphasis in desired areas of specialization. In a way prepare students for advancement in technical careers of IT related positions and responsibilities and for further study at the doctoral level.

Graduates of the programme should possess a high level of understanding in a wide range of subjects in the field of computer science and have a good knowledge of the latest developments in the field. They should also have a professional and ethical attitude towards their work, possess good leadership qualities, and be diligent and responsible in completing assigned tasks.

### Course Structure for MSCS

Master of Science in Computer Science	
Compulsory Courses	Elective Courses
Research Methodology	Web Technology / Seminar
Requirements Specification and Design	Advanced Information Retrieval / NLP
Advanced Computer Networks	Systems Thinking/ IT PM
Information Systems Security	Business Intelligence & Data Mining
Database Technology	Advanced Application Project
IT Project Management	Research Project / Thesis etc

## Master of Science in Software Engineering (MSSE)

Software Engineering is about systematic production and maintenance of software products that involves not only the technical aspects of building software systems but also the collaboration required of programming teams and the alignment of software solutions with organizational vision and strategies.

The objective of the Master of Science in Software Engineering programme is to produce graduates who have a broad and detailed knowledge in software engineering techniques, methodologies and tools. The programme focuses on specialised and advanced topics in software engineering and related fields. This programme combines the disciplines of project management, architecture, design, programming, usability and testing so that students can ensure the delivery of reliable software to increasingly large, complex and international end markets.

Graduates of this programme would ideally be capable of participating in medium to large scale industrial software development projects as system engineers, System Analysts, software architects, designers, senior programmers and team leaders. They would also be able to undertake a career in tertiary level education or conduct research in software engineering should they wish.

## Course Structure for MSSE

Master of Science in Software Engineering	
Compulsory Courses	Elective Courses
Research Methodology	Web / Database Technology
Requirements Engineering	Advanced Computer Networks
Information Systems Security	Multimedia Systems / NLP
Software Project Management	Systems Thinking / Seminar
Software Architecture & Construction	Advanced Application Project
Software Testing and Usability	Research Project / Thesis etc

## Bridging Courses

Applicants with a high level of aptitude in computing but non-IT degree in their academic background and/or have industry experience are welcome for admission. HiLCoE has designed bridging courses to this endeavour. The courses covered under the scheme are fundamental concepts in Programming, Algorithm, OS and Systems Design with hands-on-action project. The bridging scheme is, therefore, designed in order to qualify such applicants upon successful completion to join MSCS or MSSE regular programme.

## **BSc. Degree in Computer Science**

This programme is composed of general education, supportive and computer science courses all selected to meet the current needs of the IT industry and to ensure academic parity and build up students' confidence & flexibility. The curriculum is designed to prepare students to specialize in a diverse range of areas of computer science with the opportunity to further advance their career in fields such as information science and mathematical science, and to give them the broad skills essential to all areas related to science and technology.

Some of the courses offered as compulsory or elective are related to OOP, OOSAD, DBMS, Software Engineering, Web Design and Development, Data structure and algorithms, Distributed systems, Telecom management, Networking, OS, Computer Security, Computer Network, Operating Systems, AI, Discrete Mathematics, Numerical Analysis, Focusing Areas in CS, Research Methods, Operations Research, Accounting, Entrepreneurship and so forth.

Applicants eligible for admission are those students who passed The Ethiopian Higher Education Entrance Certificate Examination or its equivalent and fulfill the formal requirements set by the Ministry of Education / HERQA. Moreover, graduates with diploma/degree in other field or diploma in computer science from accredited university/college are also eligible. Exemptions could be requested, for the courses taken and mark obtained before joining HiLCoE, during application for admission by completing the form made available for this purpose.

Graduates of this programme are expected to be well-regarded to identify the challenges/opportunities of ICT. In this connection, graduates can work in several computer related jobs/positions, particularly as application developers (programmers), web service developers, system and network administrators, and serve as graduate and/or research assistants in higher education institutions.

## **Best Practices at HiLCoE**

The core staffs of HiLCoE are composed of PhD and MSc degree holders in computer science, software engineering and related fields with extensive teaching experience both in Ethiopia and abroad. Moreover, HiLCoE avails for the courses qualified instructor who is specialist in the field and exposed to the up-to-date

research and industry practices. This policy benefits the experts by exposing them to a rigorous academic environment, and the students by exposing them to real-world practice and allowing them to see how their newly acquired knowledge can be applied in the industrial context. In order to maintain its high standards and ensure quality adjunct professors who are exposed for international level of ER & D assigned for course delivery, supervision, and to give talk in seminars.

The college has networked computer laboratories containing both Windows Server and LINUX workstations. The network currently has three servers that act as domain controllers, file-servers and web-servers. Internet access is freely available to help research endeavour using wireless access points and physical connection. Students have hotline free support by the system engineers for troubleshooting their personal laptops and PCs, software installation (compilers, toolkits ...), downloading materials, books and applications burning on CDs or flash.

The research work is given prominence by forming a dedicated unit to coordinate Research, Development and Publication. The unit provides templates and a well documented guiding manual starting from the research idea conceptualization till the till dissertation. The research unit has subscription of reputed international journals and periodicals like IEEE to access articles.

The college physical and digital library contains a large collection of the latest relevant text books and reference materials, including electronic copies. In addition, the on-line course management system allows students to access course materials, participate in on-line discussion forums, and submit assignments and access marks and grades over the network or from their homes and workplaces via the Intranet (<https://hsis.student.hilcoe.net/hcms> and to access moodle [www.hilcoe.net](http://www.hilcoe.net)).

In order to ensure quality and standard continuous assessment and practical projects are expected to be delivered. The quality assurance office promotes participatory environment engaging all stakeholders to contribute at all levels of study in every aspect.

## Academic Calendar

The academic calendar is divided into three terms of 16 weeks including exams, registration, and inter term break each as follows:

<i>Autumn Term:</i>	October – January
<i>Winter Term:</i>	January – April
<i>Spring Term:</i>	May – August

## Duration of Study

Under normal circumstance the duration for each master's programme lasts 2 years and the bachelor degree programme is 4 years of study.

## Admission Procedure

Applicants are welcome through out the year. The MSSE and MSCS programmes are aimed at students who have already had first degree in computing or first degree in any discipline and a postgraduate diploma in computing or pass bridging courses. On top of this, applicants with a significant level of knowledge and experience in computing are recommended strongly. Students seeking admission should collect and complete the application form and return it to the admission office together with attested copies of original documents, letter of motivation (in 300 words) and two recent 2\*3 photos. The letter of motivation should mention the applicant justification for seeking admission. Points like computing aptitude, readiness or preparation made, the future plan, related experience and details that might be missing in the academic document like projects involved, researches attempted, certifications obtained, self thought skills and so forth should be described.

## Placement Exam

Placement assessment (oral or written) is mandatory to postgraduate (master's) programme applicants. The assessment is intended to make sure that applicants maintain the basic understanding and skills of computing from their undergraduate studies. In addition, it is believed that while applicants are preparing for the assessment, they will make themselves ready for the master's programmes both psychologically and in terms of fundamental skills and knowledge. The bridging courses provided can be taken to reinforce their undergraduate studies.

### **Note**

The information in this brochure is subject to revision and change without any prior notice when deemed necessary.

## Admission Formalities

An applicant for **HiLCoE** Graduate Programme may be granted a provisional admission if, after having submitted copies of the official documents, the applicant could not submit the official documents for verification due to valid reasons. The provisional admission will be changed into a regular admission if the student submit the official documents within the first three academic terms. The student will have to sign a separate agreement governing the rules and regulations of the provisional admission.

After having granted provisional admission, if a student fails to submit the required official documents, the provisional admission will be cancelled and the student will no more be allowed to register. **HiLCoE** may issue a certificate to the student mentioning the list of courses for which the student attended at least 75% of the sessions. This certificate is entitled “Certificate of Attendance”.

## Consultancy and Industry Link

**Cyber Security Consultancy:** Firewall, SIEM, IDS/IPS, SOC, Incident Management, File Integrity Management, Data Leak Prevention, Network Security, Database Security, Email Security, Digital Forensics, Vulnerability Management, Penetration Testing, Enterprise Architecture

**Security Compliance:** PCI DSS, ISO 2700x, NIST

**Products Consulting:** Splunk, LogRhythm, Vormetric, Palo Alto, Checkpoint, Cisco, F5, Encase, FTA Imager, Tripwire, McAfee, ForeScout

**Short Term Trainings:** CISSP, CEH, CISM, IDS/IPS, Network Security, SIEM, File Integrity, Windows Security, Linux Security, Database Security, Email Security, Web Application Security, Cryptography, Firewall, IDS/IPS, Digital Forensics, Vulnerability Management, Incident Management.

## Contact

All applications, correspondence and enquiries should be addressed to:

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