German Jordanian University
Deanship of Graduate Studies

Master of Science
In
Computer Engineering/ Thesis Track

With
Degree Seeking Option at
German Partner Universities

Study Plan
Academic Year 2017/2018

Content

1. Introduction

Computer Engineering (CE) combines the knowledge, skills, and discoveries in electrical engineering and computer science to build real-life computer systems. It covers several technology fields including computer hardware, software engineering and development, electronics, digital systems, telecommunication and network systems, multimedia, image and signal processing, robotics, and software-hardware integration. Computer engineers play a key role in almost all industries, such as telecommunication, banking and financial services, software development, government and city services, aerospace industry, health care, and manufacturing. The advent of computers has facilitated a systems approach to solving many problems in science, business, and industry.

The Department of Computer Engineering at GJU offers a unique and powerful Master of Science Program whose successful completion opens the doors to rewarding professional careers, postgraduate studies, and lifelong learning.

2. Program Objectives

The primary objectives of the MCE program are to:

1. Provide master level education that enables our graduates to pursue rewarding professional careers, postgraduate studies, and lifelong learning.
2. Provide the ICT industry with professional engineers who have sound postgraduate qualification, comprehensive understanding of computer engineering, and ability to tackle complex engineering problems .
3. Create better understanding of the practical applications and profitability of computer systems among industry managers and professionals.
4. Carry out research to solve problems of the local and global industry and to promote a computer system infrastructure for better productivity and quality.

3. Learning Outcomes

The primary learning outcomes of the MCE program are:

1. Provide a solid theoretical education, practical engineering experience, and a comprehensive curriculum that improves the critical thinking and innovation skills of students.
2. Provide students with the education and training in the field of computer engineering that allow them to make real contributions to the society and lead their careers.
3. Build an awareness of computing practices in industry and emerging technologies, emphasizing a working knowledge of current computer design and development techniques.

4. Enrollment

Students wishing to enroll in the Master's degree program in Computer Engineering must have:

A. Obtained a Bachelor of Science degree in the following disciplines:
- Computer science
- Computer Information Systems
- Management Information Systems
- Computer Engineering
- Communications Engineering
- Software Engineering
- Electrical/Electronic Engineering
- Mechanical Engineering
- Mechatronics Engineering

With a GPA of not less than 70% or equivalent.

B. Passed the TOEFL Exam with a minimum score of 500 or equivalent.

C. A relevant working experience is preferable.

Students holding other degrees need to consult with the program director for application. Students are expected to have background spanning the following:

1. Computer Systems Hardware and Software
2. Programming, data and object structures

Above is a minimum foundation of essential prerequisite knowledge needed for all students pursuing this program. Students admitted with B.Sc. in Electrical/Electronic Engineering, Mechanical Engineering, and Mechatronics Engineering must take a set of computer systems foundation courses. These foundation courses are offered at the graduate level, representing a common body of knowledge, and cover more material at a more conceptual level than comparable undergraduate courses.

5. Degree requirements

Students must complete the following requirements to obtain the double degree in Computer Engineering:

A. A total of 15 credit hours CE core courses at GJU.

B. A total of 9 credit hours specialization courses at GJU or other German partner universities. All 9 credit hours should be selected from the same specialized track.

C. A total of 9 credit hours research thesis.

Classification	GJU semester credit Hours			
	Compulsory	Electives	Total	German Partner University
Computer Engineering Core Courses	15	-	15	
Specialization		9		9*
Thesis			9	
Total =			33	

* This number of credit hours may vary depending on the specialization at the German partner University. It is also possible that a student takes these credit hours as electives at GJU.

The core courses provide students with a broad knowledge of computer systems, advanced topics in operating systems and computer architecture, networking, and distributed systems. The core courses are to be taken at GJU in the first two semesters of the program.

After completion of the first year, students have their choice of specialized courses to be offered at GJU or taken at the German partner universities. The specialization tracks are as follows:

Autonomous system
For the Autonomous System specialization, the curriculum provides students with in-depth knowledge of robotics, artificial systems, and computer technologies. Students are required to choose specialization tracks related to their work experience. The curriculum consists of 3 courses and a thesis in their specialized track. The courses and the thesis to be taken at Bonn-Rhine-Sieg University of Applied Science (BRSU) in Germany will be offered in the subsequent semesters.
Hardware System Design

For the Hardware System Design specialization, the curriculum provides students with in-depth knowledge of hardware design and implementation, digital systems, parallel architecture, and hardware/software co-design. Students are required to choose three specialized courses and a thesis in the hardware track.

Computer Network
For the Computer Network specialization, the curriculum provides students with extensive knowledge and training in the theoretical and practical aspects of computer networks, network design and management, distributed systems, and wireless communications. Students are required to choose three specialized courses and a thesis in the computer networks track.

Software System Design
For the Software System Design specialization, the curriculum provides students with extensive knowledge and training in the theoretical and practical aspects of software systems, including operating systems, system requirements, software analysis and design, and multi-agent systems. Students are required to choose three specialized courses and a thesis in the computer systems design track.

6. Degree seeking option arrangement

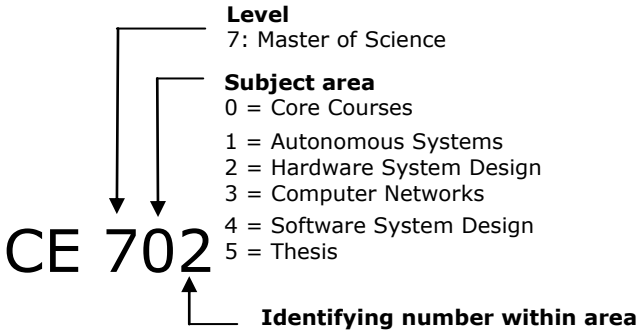
Students may choose a degree seeking option at a German partner university – now at Bonn-Rhien-Sieg University of Applied Sciences. In order to be accepted in the degree option seeking option, students must also be admitted at the master program in the German partner university, and must fulfill their degree requirements.

As of 2015/16 a cooperation agreement is signed with Bonn-Rhine-Sieg University of Applied Science for the specialization in Autonomous Systems.

7. Curriculum

The numbering system is structured as follows (from left to right):

1. Alpha digits - CE: Computer Engineering
2. Level digit - 7: Master of Science
3. Subject area digits; One digit: serial number within a given area



Core Courses
Core courses (15 credit hours) to be taken at GJU: CE 701, CE 702, CE703, CE 704, CE 705.

Course code	Course name	Credit Hours	Prerequisite
CE 701	Probability and Stochastic Modeling	3.0	
CE 702	Parallel and distributed systems	3.0	-
CE 703	Advanced computer architecture and organization	3.0	
CE 704	Network and communication systems	3.0	
CE 705	Real-time systems	3.0	-
Total =		15	

Elective Courses

Elective courses: 9 credit hours - **Autonomous Systems** to be taken at GJU or German partner University, selected from the list of the following courses

Course code	Course name	Credit Hours	Prerequisite
CE 711	Advanced Software Technology	3.0	
CE 712	Autonomous Mobile Robots	3.0	-
CE 713	Mathematics for Robotics and Control	3.0	
CE 714	Principles of Cognitive Robots	3.0	
CE 715	Computer Vision	3.0	
CE 716	Machine learning and Pattern Recognition	3.0	
CE 717	Image Processing	3.0	
CE 718	Optimization Methods	3.0	
Total =		9	

Elective courses: 9 credit hours **– Hardware system design** to be taken at GJU or German partner University, selected from the list of the following courses

Course code	Course name	Credit Hours	Prerequisite
CE 721	Introduction to VLSI	3.0	
CE 722	Parallel architecture and parallel algorithms	3.0	-
CE 723	Advanced digital systems	3.0	
CE 724	Hardware/ software co-design	3.0	
Total =		9	

Elective courses: 9 credit hours – **Computer Networks** to be taken at GJU or German partner University, selected from the list of the following courses

Course code	Course name	Credit Hours	Prerequisite
CE 731	Computer Communications and Networks	3.0	
CE 732	Fundamentals of Telecommunication Networks	3.0	-
CE 733	Network Design and Security	3.0	
CE 734	Network Management	3.0	
CE 735	Protocol Design and Validation	3.0	
CE 736	Fault-Tolerant Distributed Systems	3.0	
CE 737	Wireless Communications	3.0	
CE 738	Modeling and Analysis of Telecommunications Networks	3.0	
CE 739	Real-time and Multimedia Communication over Internet	3.0	
Total =		9	

Elective courses: 9 credit hours **– Software System Design** to be taken at GJU or German partner University, selected from the list of the following courses

Course code	Course name	Credit Hours	Prerequisite
CE 741	Advanced Operating Systems	3.0	
CE 742	Systems Requirements	3.0	-
CE 743	Advanced software analysis and design	3.0	
CE 744	Hardware/ software co-design	3.0	
CE 745	Multi-Agent Systems	3.0	
Total =		9	

Master Thesis

The master thesis is composed of 9 credit hours to be taken at GJU or German partner University with joint supervision. Students either take the courses CE 751, CE 752 and CE 753 OR CE 751 and CE 754

Course code	Course name	Credit Hours	Prerequisite
CE 751	Master thesis A	0.0	
CE 752	Master thesis B	3.0	-
CE 753	Master thesis C	6.0	
CE 754	Master thesis D	9.0	
Total =		9	

8. Study Plan Guide

First year (at GJU):

First Term			
Course No.	Course Title	Credit hours	Prerequisite
CE 701	Probability and Stochastic Modeling	3	
CE 702	Parallel and distributed systems	3	
CE 703	Advanced computer architecture and organization	3	
	Total	9	

Second Term			
Course No.	Course Title	Credit hours	Prerequisite
CE 704	Network and communication systems	3	
CE 705	Real-time systems	3	
	Technical Elective course*	3	
CE 751	Master thesis A	0	
	Total	9	

* Students who choose to study a specialization track at a German Partner University may not take an elective

Second year (at GJU or German Partner University for degree seeking option):

First Term			
Course No.	Course Title	Credit hours	Prerequisite
	Technical Elective Course	3	
	Technical Elective Course	3	
CE 752	Master thesis B	3	
	Total	9	

Second Term			
Course No.	Course Title	Credit hours	Prerequisite
CE 753	Master thesis C	6	
	Total	6	

9. Course Description

CE 701 - Probability and Stochastic Modeling

Random variables, probability distribution and density functions, functions of random variables, Markov chains, Chapman-Kolmogorov equations, classification of states, limiting probabilities, branching processes, time-reversible processes, Poisson processes, continuous-time Markov chains, birth and death processes, transition probabilities.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 702 - Parallel and distributed systems

This course covers various fundamental aspects of parallel and distributed computing systems and the techniques used for software development on these systems. The topics covered in the course include parallel hardware architecture such as multi-core, computer cluster, distributed and shared memory, hierarchical memory, graphics processing unit (GPU); multi-thread (OpenMP), multi-process, message passing (MPI); scheduling and synchronization; parallel algorithm design and multithreaded programs development; high-performance software engineering techniques; parallel applications such as matrix multiplication, matrix transposition, fast Fourier transform, sorting algorithms.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 703 - Advanced Computer Architecture and organization

This course provides in-depth coverage of fundamental architecture and implementation techniques for modern processor chips. It covers topics such as advanced pipelining, superscalar execution, out-of-order processing, speculative execution, VLIW, data parallelism, multithreading, graphics processors, and multi-core chips. The students will become familiar with complex trade-offs between performance-power-complexity and the common techniques for addressing the challenges in historical and modern processors. A central part of this course is a group project on an open research question. This course assumes a solid background on basic computer organization including instruction set design, pipelining, caching, and virtual memory.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 704 - Network and communication systems
Fundamentals of network technology based on a layered protocol stack (OSI and IP models), telephone network and Internet architecture, transport protocols (UDP, TCP), upper application layer protocols (such as HTTP, FTP, and SMTP), analysis of link layer protocols and their performance. Wireless LANs, framing and error detection in the data link layer, ARQ protocols,introduction to queuing theory, collision protocols (e.g. ALOHA, CSMA), fast packet switching, routing in data Networks, optimal routing, flow and congestion control, network management fundamentals.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 705 - Real-time systems
Introduction to real-time systems, real-time scheduling including: multiprocessor scheduling, real-time operating systems (kernels), real-time communication, real-time programming languages, reliability and fault-tolerance, and real-time system requirements and design methods; Design, analysis, and implementation of real-time kernel mechanisms and real-time applications using kernels such as Linux and programming languages such as C++.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 711 - Advanced Software Technology
Advanced techniques for software development, focusing on object-oriented programming: OO model, interfaces, encapsulation, messages, classes, objects, inheritance; overview of constructs, iteration, sequence, selection, classes, objects, exceptions and exception handling, and main APIs

Offered at BRSU

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 712 - Autonomous Mobile Robots

This course acquaints students with basic and advanced concepts of robotics and sensorimotorical systems, and essential concepts and techniques for mobility and navigation.

Offered at BRSU

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 713 - Mathematics for Robotics and Control

Mathematical introduction to modeling, analysis and control of robotic systems; Theoretical frameworks for modeling, analysis (kinematics and dynamics) and control of generic robotic mechanical systems, rooted in rich traditions of mechanics and geometry; Serial-chain and parallel-chain manipulators, wheeled mobile robots (and hybrid combinations of these systems).

Offered at BRSU

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 714 - Principles of Cognitive Robots

Concept of cognitive robots, robot design inspired by developmental mechanisms of psychologists and cognitive neuroscientists, machine learning techniques (neural computation, acoustic packaging), robotics principles and methods

Offered at BRSU

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 715 - Computer Vision

This course covers various algorithms and methods that enable a machine to understand images and videos. The topics covered in this course include image formation, feature detection, segmentation, multiple view geometry, camera geometry, 3-D reconstruction, recognition and learning, and video processing.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 716 – Machine Learning and Pattern Recognition

This course provides a broad introduction to machine learning and statistical pattern recognition. The topics covered in this course include supervised learning (generative/discriminative learning, parametric/non-parametric learning, neural networks, and support vector machines); unsupervised learning (clustering, dimensionality reduction, kernel methods); learning theory (bias/variance tradeoffs; VC theory; large margins); reinforcement learning and adaptive control. The course will also discuss recent applications of machine learning, such as to robotic control, data mining, autonomous navigation, bioinformatics, speech recognition, and text and web data processing.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 717 – Image processing

This course provides a solid background in the fundamentals of digital image processing. It covers various image processing techniques, including image representation, 2D linear systems theory, 2D Fourier analysis, digital filtering, image enhancement, and segmentation. Students in this course will be exposed to real-world applications of image processing in industry, science, engineering, and medicine. Through assignments and course project, students will become familiar with the image processing facilities available in the MATLAB numeric computation environment as well as the Open Source Computer Vision (OpenCV) library.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 718 – Optimization Methods

This course provides an introduction to various optimization methods and algorithms, including Unconstrained Optimization Methods (One-dimensional Search Methods, Gradient Methods, Newton's Method, Conjugate Direction Methods, Quasi-Newton Methods, Solving Linear Equations, Global Search Algorithms (e.g., Simulated Annealing Algorithm, Particle Swarm Optimization, and Genetic algorithms)), Linear Programming (Simplex Method, Duality, Non-simplex Methods), and Nonlinear Constrained Optimization Methods (Problems with Equality Constraints, Problems with Inequality Constraints, Convex Optimization Problems, and Algorithms for Constrained Optimization).
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 721 - Introduction to VLSI Systems
MOS transistors, static and dynamic MOS gates, MOS circuit fabrication, design rules, resistance and capacitance extraction, power and delay estimation, scaling, MOS combinational and sequential logic design, registers and clocking schemes, memory, data-path, and control-unit design; Elements of computer-aided circuit analysis, synthesis, and layout techniques.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 722 - Parallel Architectures and Parallel Algorithms
Parallelism in processors; multi-core processors; classification of parallel architectures; multiprocessor architectures; interconnections networks; Amdahl's law; abstract parallel machine models; templates for parallel algorithms; searching, merging, sorting; graph algorithms (traversing, spanning trees, connected components); numerical algorithms (matrix algorithms, linear equations). Data dependencies; shared memory computing (threads, Open MP); message passing computing; parallelization strategies (embarrassingly parallel, partitioning, pipelined, synchronous); load balance.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 723 - Advanced Digital Systems
The course covers advanced topics in digital design, with a special emphasis on how to model, simulate, synthesize and optimize large and complex subsystems. It also covers some of the practical industrial aspects of modern design, including use of hardware description languages (e.g. VHDL) for structured modeling and simulation. Other topics include: controller synthesis and optimization, iterative circuits, high-speed combinational arithmetic circuits, fault tolerance and soft error mitigation, power optimization strategies, asynchronous design, FPGA structures, and floating point arithmetic.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 724 - Hardware/ software co-design

The foundations of this lecture lie in the areas of sensors, signal processing, microcontrollers and hardware design. HW/SW co-design deals with the question of which parts of an algorithm should go into software and which into hardware.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 731 - Computer Communications and Networks
Framing and error detection in the data link layer, ARQ protocols, introduction to queuing theory, Burke's theorem and networks of queues, packet multiple access and the Aloha protocol, fast packet switching, routing in data Networks, optimal routing, flow and congestion control.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 732 - Fundamentals of Telecommunication Networks
Fundamentals of network technology based on a layered protocol stack, telephone network and Internet architecture, network protocols (IP), transport protocols (UDP, TCP), upper layer protocols (such as HTTP, FTP, and SMTP), analysis of link layer protocols and their performance, Wireless LANs and their protocols such as CSMA/CD and CSMA/CA.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 733 - Network Design and Security
Methods and techniques for the design of computer networks, management and business perspectives on network design, estimation of traffic demand and application requirements, network cost analysis, topological design, capacity planning and network optimization, availability analysis and survivable network design. Furthermore, this course covers the following main security topics: Cryptography algorithms: Computer Networks concepts. Data encryption algorithms DES, Advanced encryption AES, Hash functions, Trusting issues, Legal and ethical issues in computer security. Access control, System management, User

authentication, files protection, designing trusted OS. Writing secure code, Malicious Software, Viruses, static and dynamic buffer overflow attacks, data encapsulation, coupling and cohesion concepts, e-mail security. Threats in networks, network security controls, firewalls, intrusion detection, VPN networks, Key management, RSA algorithm, Digital signature, IPSec, Certificate authorities CA, Denial of service attacks DoS, High-speed network and cloud security (e.g., MPLS Security).
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 734 - Network Management
Protocols and architectures for network management, techniques for planning, controlling, organizing and decision making for telecommunications network, which includes security, fault management, configuration, and maintenance.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 735 - Protocol Design and Validation
Prerequisites (Fundamentals of Telecommunication networks): Introduction to OSI model and IP/TCP protocols and services, Protocol modeling techniques: FSM models, Petri net models, Hybrid models. Temporal logic; Protocol specification languages of ISO: Estelle model and language. Lotos model and language; Protocol implementation and techniques from formal specification to implementation. Protocol verification techniques: communicating FSM, reachability analysis, verification using checking, protocol design validation. Protocol performance: performance parameters, performance measurement by simulation, extensions to Estelle. Protocol testing: test architectures, test sequences, test sequence languages, test design methodology.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 736 - Fault-Tolerant Distributed Systems
Fundamentals of the design and analysis of fault-tolerant systems, Models for distributed systems, Fault/error models, Techniques for providing hardware/software redundancy, Fault-detection in multiprocessors, Stable storage, Recovery strategies for multiprocessors (check pointing), System diagnosis, Software design faults, Experimental validation techniques, Case studies in fault-tolerant distributed systems.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 737 - Wireless Communications
Prerequisites (Fundamentals of Telecommunication networks): Transmission media, analog transmission and multiplexing, digital transmission and multiplexing, link calculations, satellite transmission, microwave transmission, fading channels, nonlinear channels, intermodulation, multiple-access techniques: TDMA, FDMA, point-to-multipoint communications systems, performance objectives, measurement techniques, mobile communications systems.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 738 - Modeling and Analysis of Telecommunications Networks
Prerequisites (Fundamentals of Telecommunication networks): Application of queuing theory to the analysis of the performance of telecommunication systems; Poisson arrival process and its properties; Birthdeath processes applied to queuing, service distributions; performance measures of a queuing systems; examples of queuing systems in equilibrium; finite and infinite server and population models; Erlang blocking formulae; method of stages.; Networks of queues; product-form solution for open and closed queuing networks; computational algorithms for queuing networks; the imbedded Markov chain technique applied to queues with general service distribution, analysis of multiple access techniques, TDMA, FDMA, polling, CDMA, ALOHA and CSMA.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 739 - Real-time and Multimedia Communication over Internet
Prerequisites (Fundamentals of Telecommunication networks): Review of Internet architecture and protocols. Network impairments: jitter and delay. RTP: transport protocols for real-time data. Packet scheduling, QoS in the Internet: differentiated services, integrated services, Resource reservation protocol (RSVP), Multi-protocol label switching (MPLS). Voice/Fax/Video over IP. Internet-to-PSTN. Protocols and standards - H.323, Session Initiation Protocol (SIP) and Media Gateway Control Protocol (MGCP). Internet telephony signaling, and Interoperability issues.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 741 - Advanced Operating Systems
This course focuses on advanced operating system topics and recent developments in operating systems research, including advanced concepts of Process/Thread Management, inter-process communication, Kernel memory functions, device drivers, and interrupts. The course also involves readings and lectures on classic and new papers. Topics: virtual memory management, synchronization and communication, file systems, protection and security, operating system structure and extension techniques, fault tolerance, and history and experience of systems programming.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 742 - Systems Requirements
This course covers the use of systems requirements engineering to develop and maintain large-scale software systems. The topics included in the course include introduction to requirements engineering, project initiation, operation modeling, verification and validation, risks managing, requirements selection, requirements prioritization, requirements managing, requirements engineering, and software design.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 743 – Advanced Software Analysis and Design
This course covers the theoretical and practical aspects of software systems architecture and design. The topics of the course include covers software specification, software analysis and design, software architecture modeling and design patterns, advanced object-oriented analysis and design. The course provides students with extensive understanding of unified modeling language (UML), design patterns and architectural styles, designing and describing a software system architecture using design patterns, and applying semi-formal notations to specify a software system architecture, design structure, and design behavior.
Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

CE 744 - Hardware/ software co-design

The foundations of this lecture lie in the areas of sensors, signal processing, microcontrollers and hardware design. HW/SW co-design deals with the question of which parts of an algorithm should go into software and which into hardware.

Credit Hours: 3, Lecture Hours: 48, Lab Hours: 0

Master Thesis
The master thesis is composed of 9 credit hours to be taken at GJU or German partner University with joint supervision. Students can fulfill this requirement by taking any combination of the courses CE 751, CE 752, CE 753, and CE 754, such that the total number of registered credit hours of master thesis is equal to 9.

CE 751 – Master thesis A, credit hours: 0
CE 752 – Master thesis B, credit hours: 3
CE 753 – Master thesis C, credit hours: 6
CE 754 – Master thesis D, credit hours: 9

During the master thesis, students are expected to conduct extensive research on topics related to the field of computer engineering. Moreover, a defense exam will be conducted to evaluate the student's capabilities of carrying out research, with a focus on the analysis and interpretation of the results obtained during the period of the master thesis.

10. Tuition and fees

The following table gives a breakdown of tuition and fees at GJU:

Fees	Jordan Dinars
Credit hour fee	120
Other Fees	
Admission/Acceptance Fees	120
Refundable Collateral Fees	150
Registration Fees\ per semester	120
Computer Fees\ per semester	60
Medical Insurance Fee\ per semester	50

11. Contact information

For application and other enquiries, please contact:

E-mail: CEMaster@gju.edu.jo

Tel: +962 6 429 4100

URL: http://www.gju.edu.jo/content/computer-engineering-1411

12. List of German partner universities

- Bonn-Rhine-Sieg University of Applied Sciences, http://www.fh-bonn-rhein-sieg.de/