

# Optimizing the Final Exam Scheduling Process at King Abdulaziz University

**Abrar Al-Amoudi, Lamees Al-Hashimi, Lujain Al-Jawi and Raneem Gashgari**

Industrial Engineering Department  
King Abdulaziz University  
Jeddah, KSA

[eng.abrar94@hotmail.com](mailto:eng.abrar94@hotmail.com), [lalhashimi@hotmail.com](mailto:lalhashimi@hotmail.com), [lujain.aljawi@gmail.com](mailto:lujain.aljawi@gmail.com), [rgashgari@gmail.com](mailto:rgashgari@gmail.com)

**Raed Obaid**

Industrial Engineering Department  
King Abdulaziz University  
Jeddah, KSA

[rrmobaid@kau.edu.sa](mailto:rrmobaid@kau.edu.sa)

## Abstract

King Abdulaziz University contains separate campuses, a male and female campus, due to cultural reasons. With the recent focus on accreditation programs such as ABET, there has been an increased pressure to standardize everything between the two campuses, including final exams, despite differences in departments. The current final exam scheduling process at KAU requires administrative employees to create a schedule experimentally without well-defined guidelines which leaves underutilized time slots and process variation each semester. The goal of this study is to develop a program that follows a systematic process that utilizes time slots efficiently to generate a single unified schedule that suits both campuses.

To approach the problem, the existing process is analyzed, and improvements are identified. The improved process is divided into two phases: permanent and variable scheduling. A constraint-based approach is used where the problem is modeled as a set of resources such as room capacity and time slots, with a defined set of constraints. Linear programming is used to guarantee an optimal timetable. Finally, a computer application using the improved process is developed. It is anticipated that if the system is adopted, final exam scheduling will be much more efficient in terms of time and human effort.

## Keywords

Exam scheduling, system, optimize and courses.

## Biography

**Abrar S. Al-Amoudi** is a junior industrial engineering student at King Abdulaziz University, Jeddah, KSA. She is one of the 34 students selected by the U.S. Department for a full scholarship to the U.S. as a part of Saudi Young Leaders Exchange Program and now she is organizing with the U.S. Consulate for 2015 Youth Conference. She is in process to obtain a patent in her first project "Left-Right handed Chair". Abrar stays involved in extracurricular activities and helping out with many faculty events; she is a member in a focus group and an active member in IEEE. She has strong interpersonal skills enhanced

by taking part as a Vice President in Toastmasters International Club to develop confidence and communication abilities as she is one of founder partners of the this club at KAU. She represented her faculty in many conferences inside and outside the country as she has the skill of speaking, writing and reading fluently in three languages (Arabic, English and Malayan), and she also obtained the IEOM 2015 Outstanding Student Award in Dubai.

**Lamees M. Alhashimi** grew up in Jeddah, Saudi Arabia. She is currently a junior at King Abdulaziz University majoring in Industrial Engineering. Throughout her academic career, she has focused on exposing herself to different experiences that will ultimately make her a well-rounded individual. She participated in the Sixth Scientific Forum competition, winning first place in her category. In addition, she participated in the Boeing Innovation Summit held in Abu Dhabi. In her spare time, she plays basketball with a local team in Jeddah. As of now, like most college students, she is in the process of figuring out what exactly what she wants as a career.

**Lujain A. Aljawi** is a junior industrial engineering student at King AbdulAziz University, Jeddah, KSA. She is a very ambitious person that is open for new experiences and activities which is either in her academic career or social life, she is also looking forward in gaining new knowledge that is related to her industrial major. She is interested in scientific research, as she is an associate member of a small organization called (Manara Research) and she was one of the 18 Saudi students who participated in the intel international research competition (Intel Isef12) as well as many other undergraduate research events. She has represented my college in many conferences locally and internationally and won a couple of honors. She also has big interests in community service and volunteering. She has volunteered in many educational, social and technological events in Jeddah. She is a social student and has worked in public relation positions; she expresses leader skills that were shown in some important leading events in her school and college.

**Raed R. Obaid** is an Assistant Professor in the Department of Industrial Engineering at King AbdulazizUniversity, Jeddah, KSA. He earned B.S. in Industrial Engineering from King Abdulaziz University, Jeddah, KSA, Masters in Computer Integrated Manufacturing from Loughborough University, UK and PhD in Industrial Engineering from De Montfort University, Leicester, UK. Dr. Obaid was the Vice Dean of the Faculty of Engineering at North Jeddah Campus of King Abdulaziz University. He also worked for the Savola Company, Jeddah before joining King Abdulaziz University. Dr.Obaidwas the head of Referees Committee of Makkah and Baha Regions at Mowhiba's National Olympics for Scientific Creativity. He is a member of the Referees Committee of the Innovation and Entrepreneurship Division at the Scientific Forum for Students of King Abdulaziz University.

**Raneem W. Gashgari** is a junior year student studying Industrial Engineering at King Abdulaziz University in Jeddah, Saudi Arabia. She is currently the chair of IEEE Women in Engineering (WIE) and the vice-chair of IEEE student branch in King Abdulaziz University. Raneem had the opportunity to attend conferences abroad and one of them was IEOM 2015 which was held in Dubai, United Arab Emirates. She participated with her group in a poster session in the IEOM conferences and volunteered in the registration section as well. Ms. Gashgari does a lot of un-curricular activities and in her free times she likes to read books and volunteers.