



# Newsletter Actuarial Sciences Program

Winter 2015

INSTITUTE OF APPLIED MATHEMATICS

IN THIS ISSUE

## Getting Started

We welcome you cordially from Institute of Applied Mathematics (IAM) at Middle East Technical University (METU). The first issue of the Actuarial Sciences Program Newsletter is aimed to be published on each semester to connect you to us.

Actuarial Sciences Program is one of the graduate programs offered IAM which is one of the unique research centers in Turkey which offers graduate degrees in Actuarial Sciences, Cryptography, Financial Mathematics and Scientific Computing since its establishment in 2001. Although his young age, the achievements of the IAM are uncountable. The graduate students coming from all over the world, diverse and mixed structure of the faculty contribute to the quality and variety in research in Applied Mathematics. Having around 330 graduates being spread over Turkey and world, 273 students currently pursuing their graduate studies, IAM is flourishing every year and its impact on the research is increasing exponentially.

Though its short history at IAM, M.Sc. in Actuarial Sciences Program offers courses in international standards, combining both theoretic and practical aspects in this field. Strong foundation in probability theory, mathematical statistics, stochastic calculus,

risk theory and actuarial mathematics, the program enables students to explore the practical aspects of the insurance sector and actuarial problems and get prepared to the national and international actuary examinations. Visits to insurance companies, summer internships, seminar speakers and lecturers both among regulators and actuaries, workshop and conference organizations and collaboration with national and international Actuarial Sciences Programs contribute to the richness of the Program.

This newsletter aims to connect you with us. You will hear from our activities, impressions, achievements and see the nice moments captured from our actuarial windows of life.

Looking forward to having you connected!

Prof. Dr. Bülent Karasözen  
Institute Director

Assoc. Prof. Dr. A. Sevtap Kestel  
Institute Associate Director  
Chair of Actuarial Sciences Program

Foreword

Events in the last academic years

IAM visits IAA Seminar in Baku

Being a student in Actuarial Sciences

Being an Alumni of Actuarial Sciences

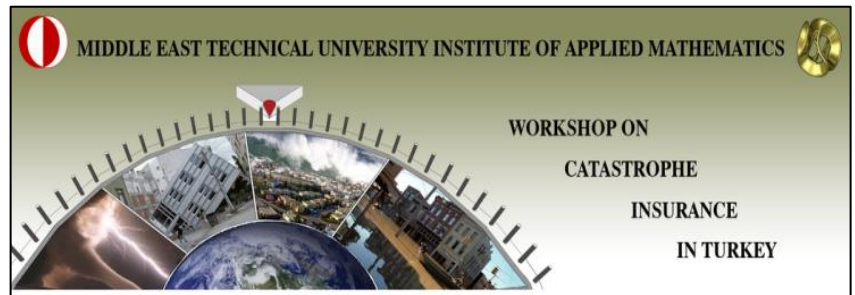
The New Academic Year...

What else is going on?

# Events

## COMPANY VISITS

The very first semester of the Program hosts a fields study course which enables students to see and understand the insurance world by meeting the executives and actuaries at insurance companies in Istanbul. Like in all other academic years, a visit to Anadolu Hayat Emekilik A.Ş. and TARSİM A.Ş. on November 2014 were organized. Team of Actuaries led by the Company Coordinator, Chief Actuary, Ms. Demet Işıksaçan, and Anadolu Hayat Emekilik CEO M. Erkan Uğur welcomed us. Another exploration was to visit TARSİM which is renowned agricultural insurance pool in Turkey. The Technical Team Chief, Mr. Necati İçer, and the Director of the company, Yusuf Cemil Satioğlu, have informed us on the activities of the Pool and the role of actuaries in their company. The presentations and meeting with such high rank experts were a great experience.



## WORKSHOPS AND SEMINARS

IAM has tradition and great experience to organize international conferences and workshops. Many internationally acknowledged conferences, such as ENUMATH, EURO EWGCFM welcomed participants from all over the world. Two workshops in insurance and Actuarial Sciences in the last two years are organized by the Actuarial Sciences Program and they both took place in Istanbul, Turkey.

### Workshop on Catastrophe Insurance in Turkey, March, 14 2013

The main objective of the workshop was to bring experts, practitioners and academicians on the same platform to discuss the catastrophe insurance modelling in Turkey. Within the scope of workshop, components and factors of catastrophic insurance such as; pricing and loss transferring models were presented. In addition, studies for the determination of catastrophe reinsurance capacity and strategies; asset qualification perspective of Solvency II were





discussed. Experts from AIR, Deloitte, Munich Re, Milli Re, EUREKO, DASK, METU conveyed their experience to an audience over 200 people. Hosted and sponsored by EUREKO, ALLIANZ, DASK and TARSİM, this event gave a wide prospect in earthquake risk, loss valuation and Turkey specific cases. For more information <http://sc.iam.metu.edu.tr/catins/>.



### Workshop on Recent Developments in Insurance – Finance, April 16, 2015

The second workshop aims bringing together experts in industry and academia to share new developments and has shed light on the financial modeling of insurance. Multi-currency CAPM, classification of insurance products, early warning model for solvency requirements, minimum pension guarantee modeling and pricing the insurance products are discussed and presented by experts from the industry and academics from national and international universities. Jointly organized by Turkish Actuaries Association and Hacettepe University, hosted by Milli Re, sponsored by Turkish Insurance Association, Orhun Emre Consultancy and Adendum Consultancy, the workshop welcomed over 100

participants from the sector and universities. For further information <http://sc.iam.metu.edu.tr/insurancefinance/>

## IAA Regional Seminar in Baku ...

Regional Seminar organized by International Actuaries Association took place in Baku-Azerbaijan in September 28-29, 2015. Actuaries from Middle East, EuroAsia, Asia and Europa are hosted by Actuaries Association of Azerbaijan and participated in discussion sessions and presentations from all over the world. Turkey is represented by the members of Turkish Actuary Association, IAM and Hacettepe University at this meeting. The first steps in future collaborations with Azerbaijan actuaries and authorities have been accomplished.



## Being a Graduate...

by **Ö. Ozan Evkaya (Intake 2009)**

After completing my undergraduate program in Department of Mathematics at METU, I decided to enrich my mathematical background with M.Sc. in Actuarial Sciences program at IAM. When I consider now, I am so grateful for my experience in such a sophisticated program and what I have learned in this research field during my studies.

Honestly, even if there was some mandatory changes occurred for the M.Sc. program while I am studying, I believed that the pronounced objectives of program are achieved well. Especially, the Master program is considerably successful in providing theoretical knowledge and practical research opportunities for students to contribute to the development of actuarial sciences, insurance, risk management and risk analysis based studies. Definitely, I can recommend the master degree in Actuarial Sciences at IAM to new candidates based on my prospering experiences.

During my master thesis study, I focused on mainly the drought impacts on agriculture insurance in Turkey by improving some Index-based insurance contracts against the drought for the wheat yield. With the extensive support of my thesis advisor, the broad pools of index-based insurance policies are constructed with some premium and indemnity

valuations, also discussing the benefits and the drawbacks of such insurance schemes.

Studying on such a crucial problem

brought a great enthusiasm about risk management techniques on environmental sciences. In fact, my master thesis has pioneered my future academic studies effectively.

Now, I chose to continue academic career and been admitted to PhD in Statistics at METU. I am at the stage of studying my thesis on agricultural insurance under the joint-supervision of Assit. Prof. Dr. Yozgatligil and Assoc. Prof. Dr. Sevtap Kestel.

I am very grateful and motivated for my future academic studies with this coherent collaboration. In the near future, I am planning to commence with the help of what I experienced from my master degree study and the deep theoretical and practical knowledge I gained during my master studies.



## Being an International Student...



by **Arham Achlak (Intake 2014)**

Being an international student in Turkey was challenging in early stages, but with time

and patience I now feel at home. Similarly, studying actuarial sciences in METU was difficult only in the beginning, but now as I have finish my first year in the master program, I realized that I have gained valuable experiences in the field. During my first semester I got lectures from an actuary who helped me understand insurance business and its challenges in general, in Turkey, and encouraged me to learn more about insurance business in my home country, Indonesia. The courses in the second semester were more practical which were effective for my

plan to enter international actuarial exams. Furthermore, the Department of Actuarial Sciences arranged an internship for me last summer in Milli Re, which is the only national reinsurer that operates in the Turkish insurance market. It is the first working life experience for me where I had chance to find out more about insurance structure and its terminologies. I met nice people in the Life Department of the company who has guided me during my internship. I was glad to be part of the team and help with some core works, such as analyzing insurance/reinsurance treaties and calculating risk amount to be retroceded. The internship program also gave me some inspiration for my master thesis which I should be focusing on this year. Moreover, the amount of support and advice from the Chair of Actuarial Sciences Program is also very helpful to build up my future career. A famous quote that a lecturer like to tell us to motivate us to study more is "The limit is yourself".

# Being a Student .....



by **Gözde Nurdağ (Intake 2013)**

I have been working for Ministry of Development Social Security Financing Department since 2013. The same time, I began to study my graduate study on Actuarial Sciences at METU. Although, it is very difficult to become a student again as an employee, the faculty at IAM always encouraged me to study hard and continue lifelong learning in Actuarial Sciences. As a Planning Expert Assistance working at Ministry of Development, and studying on Actuarial Sciences in IAM- METU teach me combining real life cases with theory. So, I have a scientific point of view and this makes me more successful in my specialization at the work place."

by **Anıl Gülveren (Intake 2014)**

"I have already studied B.Sc. in Actuarial Sciences at Hacettepe University. However, I decided to develop my career pursuing a M.Sc. at IAM in the same field. Actuarial Sciences program at IAM completely caught my attention due to its international structure and its quality in education. The lecturers are keen on giving us the best background for understanding the topics. The courses given specialized in Actuarial Sciences contributed me to pass the second level at National Actuarial Exams. In addition, based on the joint collaboration with Actuarial Sciences in Ulm University, I got the opportunity to study in Germany for six months as Erasmus+ student. Actuarial Sciences Program at IAM allowed me to learn the topics from different perspectives."



by **Cansu Telkes (Intake 2013)**

When I was studying Statistics at my Bachelor degree, I took an elective course which was "Insurance and Actuarial Analysis". After this course, I was interested in Actuarial Science and decided to study in this field. It is a fully developed area around the world and it is still at the stage of developing in Turkey. Therefore, I want to involve in the team of pioneers to make actuary step in to new age.



During my Master program in Actuarial Sciences, I have learned the theoretical part of this field in a comprehensive way and then, I had chance to apply those theories into the sector. I learned the real market and insurance business world during mandatory summer internship. Moreover, in the Actuarial Department, I've learned how to focus on and study an interdisciplinary program. By working in the projects with our academic staff, I found out how to combine theories and real world data and make actuarial analysis depend on Turkish Insurance Legislation. Now, I finished all my courses and began my thesis. My thesis is about the optimal calculation of Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR). Solvency II is insurance regulations to

reduce the risk of insolvency within the European Union (EU) area. It aims to unify a single EU insurance market and enhances consumer protection.

# Start of the New Semester ...

2015-2016 Fall Semester started with the celebration of 60<sup>th</sup> Anniversary of Middle East Technical University. In this semester, the courses Risk Management and Insurance, Pension Fund Mathematics and Advanced Actuarial Mathematics are offered from Actuarial Sciences program. For syllabuses and curriculum in detail: <http://iam.metu.edu.tr/offered-courses>

The curriculum which has changed based on the requirements of Higher Educational Institute last semester is presented below:

## GRADUATE PROGRAM IN THE ACTUARIAL SCIENCES

### Scientific Preparation Programme

IAM 530 Elements of Statistics and Probability

### Thesis and Non-Thesis Programme

| Semester I  | Semester II  |
|---|--|
| IAM 547 Risk Management and Insurance<br>IAM 541 Probability Theory *<br>IAM 566 Numerical Optimization*<br>IAM 526 Time Series Analysis*<br>IAM 550 Portfolio Optimization | IAM 546 Actuarial Risk Theory<br>IAM 582 Life Insurance Mathematics<br>IAM 522 Stochastic Calculus for Finance*<br>IAM 521 Financial Management*<br>IAM 524 Financial Economics* |
| <b>Summer internship at an insurance company</b>  |  |
| Semester III  | Semester IV  |
| IAM 583 Pension Fund Mathematics*<br>IAM 584 Advanced Actuarial Mathematics*  | IAM 590 Graduate Seminar (non-credit)<br>IAM 500 M.S. Thesis (non-credit) or<br>IAM 589 Term project (non-credit)  |

\*Elective Courses

A recent change in regulation in Graduate programs with Thesis option requires in total 21 credits including 3 cores, 4 elective courses, whereas Non-thesis Program requires in total 30 credits including 5 core and 5 elective courses. Apart from \*Elective Courses mark as (\*), students are encouraged to take the courses from different departments.

## APPLICATION REQUIREMENTS

The selection process requires documentation of the followings:

- METU-EPE (English Proficiency Exam)  $\geq 65$  or TOEFL-IBT  $\geq 79$
- ALES  $\geq 75$  or GRE-Quantitative Score  $\geq 713$
- At least 2 reference letters
- Letter of intention

Application Deadline to program: Fall Term: **December 30, 2015**, Spring Term: **June 22, 2016**

Application Deadline to EPE: Fall Term: **December 16, 2015**, Spring Term: **June 13, 2016**

Applicants will be interviewed when necessary.

For application deadlines and more information: <http://iam.metu.edu.tr/universitys-application-page>

# What else ...

Academic collaborations with

- National and international institutions: Hacettepe University, Ankara University, Ulm University, Germany, Technical University Kaiserslautern, Germany, Albert-Ludwigs University Freiburg, Germany, Illinois State University, USA.
- Erasmus Mundus Exchange agreements with more than 15 universities.
- Public and Private sectors contacts: Undersecretariat of Treasury, Social Security Institute, Ministry of Development, Ministry of Food, Agriculture and Livestock, Turkish Insurance Association, Turkish Actuaries Association and insurance companies, DAV (German Actuary Association), International Insurance Association, European Actuarial Association.
- Memberships to SIAM and EURO, close connections to SOA.
- Projects with industry: “Construction of Turkish Morbidity Tables: Phase 1”, Turkish Airforce Retirement Fund Association.

# Faculty

KESTEL, A. Sevtap: B.S., M.S. METU; MBA. St. John’s University; Ph.D. METU

## AFFILIATED FACULTY

BAYRAK, Özlem: B.S., M.S., Ph. D. METU, Çankaya University.

BATMAZ, İnci: B.S. METU; M.S., Ph.D. Ege University.

ERKAN BAŞBUĞ, B. Burçak: B.S. METU; M.S. University of Warwick; Ph.D. London School of Economics.

İLK DAĞ, Özlem: B.S. METU, M.S., Ph.D. Iowa State University.

KORKMAZ, Selda: B.S. METU, M.S. Boston University, Actuary.

KÜTÜK, Fikret: B.S. METU, M.B.A. St. John’s University, Actuary.

TANK, Fatih: B.S., M.S., Ph.D. Ankara University.

YAZICI, Selamet: B.S. Marmara University, M.B.A. St. John’s University, Actuary.

YOZGATLIGİL-TALU, Ceylan: B.S., M.S. METU, Ph.D. Temple University.

# Newsletter Actuarial Sciences Program

Institute of Applied  
Mathematics

Middle East Technical  
University

PHONE:

+90 312 210 2987

FAX:

Fax: +90 312 210 2985

Find us on the Web:

<http://iam.metu.edu.tr/>

To reach online format of this newsletter, please go:

[www.iam.metu.edu.tr](http://www.iam.metu.edu.tr)

All images are private picture and require permission to use.

Editors:

Assoc. Prof. Dr. Sevtap Kestel, Actuary

Bükre Yıldırım , M.Sc., Trainee Actuary

Meral Şimşek, M.Sc. Candidate



ORTA DOĞU TEKNİK ÜNİVERSİTESİ  
MIDDLE EAST TECHNICAL UNIVERSITY

Üniversiteler Mah. Dumlupınar Blv. No:1 , Çankaya Ankara, 06800