**DERS ÖĞRETİM PLANI**

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| **Dersin Adı** | Afet ve Acil Durum Yönetimi | | |
| **Dersin Kodu** | IE464 | | |
| **Dersin Türü** | Seçmeli | | |
| **Dersin Seviyesi** | Lisans | | |
| **Dersin AKTS Kredisi** | 5 | | |
| **Haftalık Ders Saati** | 3 | | |
| **Haftalık Uygulama Saati** | 0 | | |
| **Haftalık Laboratuvar Saati** | 0 | | |
| **Dersin Verildiği Yıl** | Her yıl | | |
| **Dersin Verildiği Yarıyıl** | Güz veya Bahar | | |
| **Dersin Öğretim Üyesi** | Doç. Dr. İbrahim Akgün | | |
| **Öğretim Sistemi** | Örgün öğretim | | |
| **Eğitim Dili** | İngilizce | | |
| **Dersin Ön Koşulu Olan Ders** | IE 221, IE 222, IE 212, IE 213, IE325 | | |
| **Ders İçin Önerilen Diğer Hususlar** |  | | |
| **Staj Durumu** | Yok | | |
| **DERSİN AMACI** | Dersin amacı öğrencilere afet/acil durum yönetiminin temel ilkeleri ve temel sorunları hakkında bilgi vermektir. Afet/acil durum yönetiminin dört aşaması olan zarar azaltma, hazırlık, müdahale ve iyileştirme süreçlerine ilişkin konular tartışılmaktadır. Afet eğilimleri, tehlikeler, riskler ve hasar görebilirlik gibi konuların yanı sıra, yönetim yapıları ve gelişmeleri, son zamanlarda dünyadaki ulusal ve uluslararası girişimler de ele alınmaktadır. | | |
| **ÖĞRENME ÇIKTILARI** | Bu dersi tamamlayan bir öğrenci, | | |
| 1. Afet ve afet türlerini tanımlar ve açıklar. | | |
| 2. Afet yönetimi ve safhalarını tanımlar ve açıklar. | | |
| 3. Risk yönetim sürecini tanımlar ve açıklar. | | |
| 4. Afet yönetiminin çeşitli safhalarındaki karar verme problemlerinin sınıflandırmasını yapar. | | |
| 5. Afet yönetimin çeşitli safhalarındaki karar verme problemleri için yapılabilecek çalışmaları ve hangi Yöneylem Araştırması tekniklerinin kullanılabileceğini bilir. | | |
| 6. Afet yönetimine ilişkin bir gerçek hayat problemini ele alıp uygun bir Yöneylem Araştırması tekniğini uygulayarak çözer. | | |
| **DERSİN İÇERİĞİ** |  | | |
| **HAFTALIK AYRINTILI DERS İÇERİĞİ** | **HAFTA** | **KONULAR** | |
| **Teorik Dersler** | **Uygulama** |
| **1** | Afet ve Afet Türleri |  |
| **2** | Afet Yönetimi ve Safhaları |  |
| **3** | Risk Yönetimi |  |
| **4** | Makale İncelemesi |  |
| **5** | Makale İncelemesi |  |
| **6** | Makale İncelemesi |  |
| **7** | Makale İncelemesi |  |
| **8** | Ara Sınav |  |
| **9** | Makale İncelemesi |  |
| **10** | Makale İncelemesi |  |
| **11** | Makale İncelemesi |  |
| **12** | Makale İncelemesi |  |
| **13** | Makale İncelemesi |  |
| **14** | Makale İncelemesi |  |
| **15** | Makale İncelemesi |  |
| **16** | Final |  |

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| **DERS KİTABI/MALZEMESİ/ÖNERİLEN KAYNAKLAR** | **DERS KİTABI:** Coppola, Damon. Introdcution to International Disaster Management, Butterworth-Heinemann, 2nd edition (March 9, 2011)    Academic Paper:   * Altay, N., Green, W.G., 2006. OR/MS research in disaster operations management. European Journal of Operational Research 175 (1), 475–493. * Galindo G, Batta R., 2013. Review of recent developments in OR/MS research in disaster management. European Journal of Operational Research 230 (2), 201–11. * Balcik, B.,Beamon, B.M., Krejci, C.C., Muramatsu, K.M., Ramirez, M., 2010. Coordination in humanitarian relief chains: practices, challenges and opportunities. International Journal of Production Economics 126 (1), 22–34. * Kumar, S.,Havey, T., 2013. Before and after disaster strikes: A relief supply chain decision support framework. International Journal of Production Economics 145 (1), 613-629. * Beamon, B.M.,Balcik, B., 2008). Performance measurement in humanitarian relief chains. International Journal of Public Sector Management 21 (1), 4 – 25. * Murray-Tuite, P.,Wolshon, B., 2013. Evacuation transportation modeling: An overview of research, development, and practice. Transportation Research Part C 27, 25-45. * Brown, C.,Milke, M., Seville, E., 2011. Disaster waste management: A review article, Waste Management 31, 1085-1098. * Fetter, G.,Rakes, T., 2012. Incorporating recycling into post-disaster debris disposal, Socio-Economic Planning Sciences 46, 14-22. * Afshar, A.,Haghani A., 2012. Modeling integrated supply chain logistics in real-time large-scale disaster relief operations. Socio-Economic Planning Sciences 46, 327-338. * Balcik B, Beamon B.M., 2008. Facility location in humanitarian relief. International Journal of Logistics: Research and Applications 11(2), 101–21. * Balcik, B.,Beamon, B.M., Smilowitz, K., 2008. Last mile distribution in humanitarian relief. Journal of Intelligent Transportation Systems 12 (2), 51–63. * Görmez, N.,Köksalan, M., Salman, F.S., 2011. Locating disaster response facilities in Istanbul. Journal of the Operational Research Society 62, 1–14. * Barbarosoglu, G.,Ozdamar, L., Cevik, A., 2002. An interactive approach for hierarchical analysis of helicopter logistics in disaster relief operations. European Journal of Operational Research 140 (1), 118–133. * Crowther, K.G.,Haimes, Y.Y., 2005. Application of the Inoperability Input–Output Model (IIM) for Systemic Risk Assessment and Management of Interdependent Infrastructures, Systems Engineering 8 (4), 323-341. * Haimes, Y.Y.,Crowther, K., Horowitz, B.M., 2008. Homeland Security Preparedness: Balancing Protection with Resilience in Emergent Systems, System sEngineering 11, 287-308. * Hamalainen, R.M.,Lindstedt, M.R.K., Sinkko, K. 2000. Multiattribute Risk Analysis in Nuclear Emergency Management, Risk Analysis 20 (4). * Duran, S.,Gutierrez, M.A., Keskinocak, P., 2011. Pre-Positioning of Emergency Items for CARE International. Interfaces 41(3), 223-237. * Akgün, İ.,Gümüşbuğa, F., Tansel B.Ç., 2015. Risk-Based Facility LocationBy Using Fault Tree Analysis in Disaster Management”, International Journal of Management Science (OMEGA), doi:10.1016/j.omega.2014.04.003 * Erkut, E.,Ingolfsson, A., 2000. Catastrophe avoidance models for hazardous materials route planning. Transportation Science 34 (2), 165–179. * Saat, M.R.,Werth, C.J., Schaeffer, D., Yoon, H., Barkan, C.P.L., 2014. Environmental risk analysis of hazardous material rail transportation. Journal of Hazardous Materials 264, 560–569. * El-Anwar, O., El-Rayes, K., Elnashai, A., 2010. Minimization of socio economic disruption for displaced populations following disasters, Disasters 34(3), 865−883. * El-Anwar, O., El-Rayes, K., Elnashai, A., 2010. Journal of Construction Engineering and Management 136 (7). * Ambs, K.,Cwilich, S., Deng, M., Houck, D.J., Lynch, D.F., Yan, D., 2000. Optimizing restoration capacity in the AT&T network. Interfaces 30 (1), 26–44. * Yan, S.,Shih, Y., 2009. Optimal scheduling of emergency road way repair and subsequent relief distribution. Computers and Operations Research36 , 2049-2065. * [Scaparra, M.P.,](https://www.econbiz.de/Search/Results?lookfor=%22Scaparra%2C+Maria+Paola%22&type=Author&limit=20)[Church, R.L.](https://www.econbiz.de/Search/Results?lookfor=%22Church%2C+Richard+L.%22&type=Author&limit=20), 2012. Protecting supply systems to mitigate potential disaster : a model to fortify capacitated facilities. International Regional Science Review 35 (2), 188-210 * Valdmanis, V.,Bernet, P., Moises, C., 2010. Hospital capacity, capability, and emergency preparedness. European Journal of Operational Research 207, 1628-1634 * Yi, P., George, S.K., Paul, J.A., Lin, L., 2010. Hospital capacity planning for disaster emergency management. Socio-Economic Planning Sciences 44, 151–160 * Savachkin, A.,Uribe, A., 2012. Dynamic redistribution of mitigation resources during influenza pandemics, Socio-Economic Planning Sciences 46, 33-45   Mete, H.O.,Zabinsky, Z.B., 2010. Stochastic optimization of medical supply location and distribution in disaster management. Int. J. Production Economics 126, 76–84 model for the tourism industry, Tourism Management 32, 158-171  **YARDIMCI KİTAPLAR:**  **ÇEVRİMİÇİ KAYNAK:** | |
| **DEĞERLENDİRME** | | |
| **Yarıyıl (Yıl) İçi Etkinlikleri** | **Sayısı** | **Katkı Yüzdesi %** |
| Makale Sunumu | 5 | 40 |
| Proje Ara Dönem Sınavı | 1 | 20 |
| Proje Final Sınavı | 1 | 40 |
| **TOPLAM** | | **100** |
| **Yarıyıl İçi Etkinliklerinin Başarı Notuna Katkısı** | | 60 |
| **Yarıyıl Sonu Sınavının Başarı Notuna Katkısı** | | 40 |
| **TOPLAM** | | **100** |

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| **Dersin Öğrenme, Öğretme ve Değerlendirme Etkinlikleri Çerçevesinde İş yükünün Hesaplanması** | | | |
| **Etkinlikler** | **Sayısı** | **Süresi**  **(saat)** | **Toplam İş Yükü**  **(saat)** |
| Ders | 16 | 3 | 48 |
| Dönem Projesi | 1 | 30 | 30 |
| Ara Sınav Çalışması | 1 | 10 | 10 |
| Final Sınavı Çalışması | 1 | 16 | 16 |
| Haftalık Ders Tekrarı | 14 | 1.5 | 21 |
| Sunumlar | 5 | 5 | 25 |
| **TOTAL** | 38 | 65.5 | 150 |
| **AKTS KREDİSİ** | **150/30** | | **5** |

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| **Program ve Öğrenme Çıktıları İlişkisi\*** | | | | | | | | | | | | | | | | | | | |
| **Ders Öğrenme Çıktıları** | **Program Çıktıları** | | | | | | | | | | | | | | | | | |
| **PÇ1** | **PÇ2** | **PÇ3** | **PÇ4** | **PÇ5** | **PÇ6** | **PÇ7** | **PÇ8** | **PÇ9** | **PÇ10** | **PÇ11** | **PÇ12** | **PÇ13** | **PÇ14** | **PÇ15** | **PÇ16** | **PÇ17** | **PÇ18** |
| **ÖÇ1** | 4 | 4 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| **ÖÇ2** | 4 | 4 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| **ÖÇ3** | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 5 | 3 |
| **ÖÇ4** | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 3 |
| **ÖÇ5** | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 5 | 5 | 4 | 5 | 3 |
| **ÖÇ6** | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 5 | 5 | 4 | 5 | 3 |

**\*Katkı düzeyi:** 1-Çok Düşük, 2-Düşük, 3-Orta,4-Yüksek, 5-Çok yüksek

**INDIVIDUAL COURSE DESCRIPTION**

|  |  |  |  |
| --- | --- | --- | --- |
| **Course Unit Title** | Operations Research Models in Disaster Management | | |
| **Course Unit Code** | IE464 | | |
| **Type of Course Unit** | Elective | | |
| **Level of Course Unit** | Undergraduate | | |
| **Number of ECTS Credits Allocated** | 5 | | |
| **Theoretical (hour/week)** | 3 | | |
| **Practice (hour/week)** | 0 | | |
| **Laboratory (hour/week)** | 0 | | |
| **Year of Study** | Every year | | |
| **Semester when the course unit is delivered** | Fall or Spring | | |
| **Name of Lecturer(s)** | Assoc. Prof. Dr. İbrahim Akgün | | |
| **Mode of Delivery** | Face-to-face | | |
| **Language of Instruction** | English | | |
| **Prerequisites and co-requisites** | IE 221, IE 222, IE 212, IE 213, IE325 | | |
| **Recommended Optional Programme Components** |  | | |
| **Work Placement** | None | | |
| **OBJECTIVES OF THE COURSE** | The goal of the course is to give an introduction to basic concepts in disaster management, definitions and terminology used in disaster management, types and categories of disasters. The main objective of the course is to investigate Operations Research models used to solve several problems in disaster operations management. The models span issues in mitigation, preparedness, response, and recovery phases of disaster management. | | |
| **LEARNING OUTCOMES** | A student who completes this course will be able to | | |
| 1. Defines and explains disaster and disaster types. | | |
| 2. Defines and explains disaster management and phases. | | |
| 3. Describe and explain the risk management process. | | |
| 4. Classify decision-making problems at various stages of disaster management. | | |
| 5. Knowing the work that can be done for decision making problems at various stages of disaster management and which operational research techniques can be used. | | |
| 6. Solve a real-life problem related to disaster management by applying an appropriate Operational Research technique. | | |
| **COURSE CONTENT** | **WEEK** | | |
| **WEEKLY DETAILED COURSE CONTENT** | **WEEK** | **SUBJECTS** | |
| **Theoretical** | **Practice** |
| **1** | Disaster and types |  |
| **2** | Disaster Management and stages |  |
| **3** | Risk Management |  |
| **4** | Academic Paper Review |  |
| **5** | Academic Paper Review |  |
| **6** | Academic Paper Review |  |
| **7** | Academic Paper Review |  |
| **8** | Midterm |  |
| **9** | Academic Paper Review |  |
| **10** | Academic Paper Review |  |
| **11** | Academic Paper Review |  |
| **12** | Academic Paper Review |  |
| **13** | Academic Paper Review |  |
| **14** | Academic Paper Review |  |
| **15** | Academic Paper Review |  |
| **16** | Final Exam |  |

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| **RECOMMENDED/REQUIRED**  **READING SOURCES** | **TEXTBOOK:** Coppola, Damon. Introdcution to International Disaster Management, Butterworth-Heinemann, 2nd edition (March 9, 2011)    Academic Paper:   * Altay, N., Green, W.G., 2006. OR/MS research in disaster operations management. European Journal of Operational Research 175 (1), 475–493. * Galindo G, Batta R., 2013. Review of recent developments in OR/MS research in disaster management. European Journal of Operational Research 230 (2), 201–11. * Balcik, B.,Beamon, B.M., Krejci, C.C., Muramatsu, K.M., Ramirez, M., 2010. Coordination in humanitarian relief chains: practices, challenges and opportunities. International Journal of Production Economics 126 (1), 22–34. * Kumar, S.,Havey, T., 2013. Before and after disaster strikes: A relief supply chain decision support framework. International Journal of Production Economics 145 (1), 613-629. * Beamon, B.M.,Balcik, B., 2008). Performance measurement in humanitarian relief chains. International Journal of Public Sector Management 21 (1), 4 – 25. * Murray-Tuite, P.,Wolshon, B., 2013. Evacuation transportation modeling: An overview of research, development, and practice. Transportation Research Part C 27, 25-45. * Brown, C.,Milke, M., Seville, E., 2011. Disaster waste management: A review article, Waste Management 31, 1085-1098. * Fetter, G.,Rakes, T., 2012. Incorporating recycling into post-disaster debris disposal, Socio-Economic Planning Sciences 46, 14-22. * Afshar, A.,Haghani A., 2012. Modeling integrated supply chain logistics in real-time large-scale disaster relief operations. Socio-Economic Planning Sciences 46, 327-338. * Balcik B, Beamon B.M., 2008. Facility location in humanitarian relief. International Journal of Logistics: Research and Applications 11(2), 101–21. * Balcik, B.,Beamon, B.M., Smilowitz, K., 2008. Last mile distribution in humanitarian relief. 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Optimizing restoration capacity in the AT&T network. Interfaces 30 (1), 26–44. * Yan, S.,Shih, Y., 2009. Optimal scheduling of emergency road way repair and subsequent relief distribution. Computers and Operations Research36 , 2049-2065. * [Scaparra, M.P.,](https://www.econbiz.de/Search/Results?lookfor=%22Scaparra%2C+Maria+Paola%22&type=Author&limit=20)[Church, R.L.](https://www.econbiz.de/Search/Results?lookfor=%22Church%2C+Richard+L.%22&type=Author&limit=20), 2012. Protecting supply systems to mitigate potential disaster : a model to fortify capacitated facilities. International Regional Science Review 35 (2), 188-210 * Valdmanis, V.,Bernet, P., Moises, C., 2010. Hospital capacity, capability, and emergency preparedness. European Journal of Operational Research 207, 1628-1634 * Yi, P., George, S.K., Paul, J.A., Lin, L., 2010. Hospital capacity planning for disaster emergency management. Socio-Economic Planning Sciences 44, 151–160 * Savachkin, A.,Uribe, A., 2012. Dynamic redistribution of mitigation resources during influenza pandemics, Socio-Economic Planning Sciences 46, 33-45 * Mete, H.O.,Zabinsky, Z.B., 2010. Stochastic optimization of medical supply location and distribution in disaster management. Int. J. Production Economics 126, 76–84 model for the tourism industry, Tourism Management 32, 158-171   **RECOMMENDED BOOKS:**  **ONLINE SOURCES:** | |
| **ASSESSMENT** | | |
| **Term Learning Activities** | **Quantity** | **Weight, %** |
| Academic Paper Review | 5 | 40 |
| Project Midterm Exam | 1 | 20 |
| Project Final Exam | 1 | 40 |
| **TOTAL** | | **100** |
| **Contribution of Term Learning Activities to Success Grade** | | 60 |
| **Contribution of Final Exam to Success Grade** | | 40 |
| **TOTAL** | | **100** |

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| **Planned Learning Activities, Teaching Methods, Evaluation Methods and Student Workload** | | | |
| **Activities** | **Quantity** | **Duration**  **(hour)** | **Total Work Load**  **(hour)** |
| Lectures | 16 | 3 | 48 |
| Term Project | 1 | 30 | 30 |
| Study for Midterm Exam | 1 | 10 | 10 |
| Study for Final Exam | 1 | 16 | 16 |
| Self-Study | 14 | 1.5 | 21 |
| Presentations | 5 | 5 | 25 |
| **TOTAL** | 38 | 65.5 | 150 |
| **ECTS CREDITS** | **150/30** | | **5** |

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| **Contribution of Learning Outcomes to Programme Outcomes\*** | | | | | | | | | | | | | | | | | | | |
| **Learning Outcomes** | **Programme Outcomes** | | | | | | | | | | | | | | | | | |
| **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PO13** | **PO14** | **PO15** | **PO16** | **PO17** | **PO18** |
| **LO1** | 4 | 4 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| **LO2** | 4 | 4 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| **LO3** | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 3 | 5 | 5 | 4 | 5 | 3 |
| **LO4** | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 3 |
| **LO5** | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 5 | 5 | 4 | 5 | 3 |
| **LO6** | 4 | 4 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 5 | 5 | 4 | 5 | 3 |

**\*Contribution level:** 1-Very Low, 2-Low, 3-Medium, 4-High, 5-Very High