

GENEL TANIM / GENERAL DESCRIPTION

Ders Adı / Course Name	Posionous Vertebrate Animals-II / Posionous Vertebrate Animals-II	
Ders Kodu / Course Code	9105035582022	
Ders Türü / Course Type		
Ders Seviyesi / Course Level	Second Cycle / Second Cycle	
Ders Akts Kredi / ECTS	8.00	
Haftalık Ders Saati (Kuramsal) / Course Hours For Week (Theoretical)	3.00	
Haftalık Uygulama Saati / Course Hours For Week (Objected)	0.00	
Haftalık Laboratuar Saati / Course Hours For Week (Laboratory)	0.00	
Dersin Verildiği Yıl / Year	1	
Öğretim Sistemi / Teaching System	Face to Face / Face to Face	
Eğitim Dili / Education Language	Turkish / Turkish	
Ön Koşulu Olan Ders(ler) / Precondition Courses	Yok	None
Amacı / Purpose	Bu dersin amacı çevremizde yer alan çeşitli zehirli omurgalı hayvanlar ve zehirleri hakkında bilgi sahibi olarak bu canlılara karşı daha bilinçli yaklaşmaktır.	The aim of this course is to have a more conscious approach to these creatures by having knowledge about various poisonous vertebrate animals and their poisons in our environment.
İçeriği / Content	<ul style="list-style-type: none"> • Hayvan zehirlerinin önemli biyolojik işlevleri • Toksinolojiye giriş • Zehirli omurgalı hayvanlar ve özellikleri • Zehirli ısırıklar, sokmalar ve tedavileri 	<ul style="list-style-type: none"> • Learning the biological function of animal venoms • Introduction to toxinology • Venomous vertebrates and their characteristics • Bites, stings and envenoming injuries and treatments
Önerilen Diğer Hususlar / Recommended Other Considerations	Yok	None
Staj Durumu / Internship Status	Yok	None
Kitap / Malzemesi / Önerilen Kaynaklar / Books / Materials / Recommended Reading	<p>Amr ZS, Abu Baker MA, Warrell DA (2020) Terrestrial venomous snakes and snakebites in the Arab countries of the Middle East. Toxicon 177:1-15.</p> <p>Arakawa O, Hwang DF, Taniyama S, Takatani T (2010) Toxins of Pufferfish That Cause Human Intoxications. Coastal Environmental and Ecosystem Issues of the East China Sea, Eds., A. Ishimatsu and H.-J. Lie, pp. 227-244.</p> <p>Arıkan H, Akçiçek E (2013) Zehirli ve Tehlikeli Hayvanlar. Zooloji ve Tıp. 234s. Konak Belediyesi</p> <p>Dufton MJ (1992) Venomous mammals. Pharmac Ther 53:199-215.</p>	<p>Amr ZS, Abu Baker MA, Warrell DA (2020) Terrestrial venomous snakes and snakebites in the Arab countries of the Middle East. Toxicon 177:1-15.</p> <p>Arakawa O, Hwang DF, Taniyama S, Takatani T (2010) Toxins of Pufferfish That Cause Human Intoxications. Coastal Environmental and Ecosystem Issues of the East China Sea, Eds., A. Ishimatsu and H.-J. Lie, pp. 227-244.</p> <p>Arıkan H, Akçiçek E (2013) Zehirli ve Tehlikeli Hayvanlar. Zooloji ve Tıp. 234s. Konak Belediyesi</p> <p>Dufton MJ (1992) Venomous mammals. Pharmac Ther 53:199-215.</p>

<p>Edstrom, A. (1992) <i>Venomous and Poisonous Animals</i>. Krieger Publishing Company. Malabar, Florida.</p> <p>Fusco LS, Cajade R, Pineiro JM, Tores A, da Silva IRF, Hyslop S, Leiva LC, Pimenta DC, Bustillo S (2020) Biochemical characterization and cytotoxic effect of the skin secretion from the red-spotted Argentina frog <i>Argenteohyla siemersi</i> (Anura: Hylidae). <i>Journal of Venomous Animals and Toxins including Tropical Diseases</i>. 26:e20190078</p> <p>Ghafari SM, Jamili S, Bagheri KP, Ardakani EM, Fatemi MR, Shahbazzadeh F, Shahbazzadeh D (2013) The first report on some toxic effects of green scat, <i>Scatophagus argus</i> an Iranian Persian Gulf venomous fish. <i>Toxicon</i> 66:82-87.</p> <p>Giorgianni MW, Dowell NL, Griffin S, Kassner VA, Selegue JE (2020) The origin and diversification of a novel protein family in venomous snakes. <i>Proceedings of the National Academy of Sciences</i>. 117(20):10911-10920.</p> <p>Gusmao KAG, dos Santos DM, Santos VM, Cortes ME, Reis PVM, Santos VL, Pilo-Veloso D, Verly RM, de Lima ME, Resende JM (2017) Ocellatin peptides from the skin secretion of the South American frog <i>Leptodactylus labyrinthicus</i> (Leptodactylidae): characterization, antimicrobial activities and membrane interactions. <i>Journal of Venomous Animals and Toxins including Tropical Diseases</i>. 23(4). DOI 10.1186/s40409-017-0094-y</p> <p>Isbister GK (2001) Venomous fish stings in Tropical Northern Australia 19(7):561-565.</p> <p>Leviton AE, Wogan GOU, Koo MS, Zug GR, Lucas RS, Vindum JV (2003) The Dangerously Venomous Snakes of Myanmar Illustrated Checklist with Keys. <i>Proceedings of the California Academy of Sciences</i> 54:22-27.</p> <p>Ligabue-Braun R, Carlini CR (2015) Poisonous birds: A timely review. <i>Toxicon</i> 99:102-108.</p> <p>Ligabue-Braun R, Verli H, Carlini CR (2012) Venomous mammals: a review. <i>Toxicon</i> 59: 680-695.</p> <p>Mackessy SP (2021) <i>Handbook of venoms and toxins of Reptiles</i>. CRC Pres Taylor & Francis Group. Boca Raton, London & New York. 2nd edition</p> <p>Meier J, White J (2008) <i>Handbook of clinical toxicology and of animal venoms and poisons</i>. CRC Press</p> <p>Ming-Yi L, Ruey-Jen H (1997) Toxoids and Antivenoms of Venomous Snakes in Taiwan. <i>Journal of Toxicology: Toxin Reviews</i> 16(3):163-175.</p> <p>Noguchi T, Arakawa O, Takatani T (2006) TTX accumulation in pufferfish. <i>Comparative Biochemistry and Physiology, Part D</i> 145-152.</p> <p>Warrel DA (2005) Treatment of bites by adders and exotic venomous snakes. <i>BMJ</i> 331:1244-1247.</p>	<p>Edstrom, A. (1992) <i>Venomous and Poisonous Animals</i>. Krieger Publishing Company. Malabar, Florida.</p> <p>Fusco LS, Cajade R, Pineiro JM, Tores A, da Silva IRF, Hyslop S, Leiva LC, Pimenta DC, Bustillo S (2020) Biochemical characterization and cytotoxic effect of the skin secretion from the red-spotted Argentina frog <i>Argenteohyla siemersi</i> (Anura: Hylidae). <i>Journal of Venomous Animals and Toxins including Tropical Diseases</i>. 26:e20190078</p> <p>Ghafari SM, Jamili S, Bagheri KP, Ardakani EM, Fatemi MR, Shahbazzadeh F, Shahbazzadeh D (2013) The first report on some toxic effects of green scat, <i>Scatophagus argus</i> an Iranian Persian Gulf venomous fish. <i>Toxicon</i> 66:82-87.</p> <p>Giorgianni MW, Dowell NL, Griffin S, Kassner VA, Selegue JE (2020) The origin and diversification of a novel protein family in venomous snakes. <i>Proceedings of the National Academy of Sciences</i>. 117(20):10911-10920.</p> <p>Gusmao KAG, dos Santos DM, Santos VM, Cortes ME, Reis PVM, Santos VL, Pilo-Veloso D, Verly RM, de Lima ME, Resende JM (2017) Ocellatin peptides from the skin secretion of the South American frog <i>Leptodactylus labyrinthicus</i> (Leptodactylidae): characterization, antimicrobial activities and membrane interactions. <i>Journal of Venomous Animals and Toxins including Tropical Diseases</i>. 23(4). DOI 10.1186/s40409-017-0094-y</p> <p>Isbister GK (2001) Venomous fish stings in Tropical Northern Australia 19(7):561-565.</p> <p>Leviton AE, Wogan GOU, Koo MS, Zug GR, Lucas RS, Vindum JV (2003) The Dangerously Venomous Snakes of Myanmar Illustrated Checklist with Keys. <i>Proceedings of the California Academy of Sciences</i> 54:22-27.</p> <p>Ligabue-Braun R, Carlini CR (2015) Poisonous birds: A timely review. <i>Toxicon</i> 99:102-108.</p> <p>Ligabue-Braun R, Verli H, Carlini CR (2012) Venomous mammals: a review. <i>Toxicon</i> 59: 680-695.</p> <p>Mackessy SP (2021) <i>Handbook of venoms and toxins of Reptiles</i>. CRC Pres Taylor & Francis Group. Boca Raton, London & New York. 2nd edition</p> <p>Meier J, White J (2008) <i>Handbook of clinical toxicology and of animal venoms and poisons</i>. CRC Press</p> <p>Ming-Yi L, Ruey-Jen H (1997) Toxoids and Antivenoms of Venomous Snakes in Taiwan. <i>Journal of Toxicology: Toxin Reviews</i> 16(3):163-175.</p> <p>Noguchi T, Arakawa O, Takatani T (2006) TTX accumulation in pufferfish. <i>Comparative Biochemistry and Physiology, Part D</i> 145-152.</p> <p>Warrel DA (2005) Treatment of bites by adders and exotic venomous snakes. <i>BMJ</i> 331:1244-1247.</p>	<p>Edstrom, A. (1992) <i>Venomous and Poisonous Animals</i>. Krieger Publishing Company. Malabar, Florida.</p> <p>Fusco LS, Cajade R, Pineiro JM, Tores A, da Silva IRF, Hyslop S, Leiva LC, Pimenta DC, Bustillo S (2020) Biochemical characterization and cytotoxic effect of the skin secretion from the red-spotted Argentina frog <i>Argenteohyla siemersi</i> (Anura: Hylidae). <i>Journal of Venomous Animals and Toxins including Tropical Diseases</i>. 26:e20190078</p> <p>Ghafari SM, Jamili S, Bagheri KP, Ardakani EM, Fatemi MR, Shahbazzadeh F, Shahbazzadeh D (2013) The first report on some toxic effects of green scat, <i>Scatophagus argus</i> an Iranian Persian Gulf venomous fish. <i>Toxicon</i> 66:82-87.</p> <p>Giorgianni MW, Dowell NL, Griffin S, Kassner VA, Selegue JE (2020) The origin and diversification of a novel protein family in venomous snakes. <i>Proceedings of the National Academy of Sciences</i>. 117(20):10911-10920.</p> <p>Gusmao KAG, dos Santos DM, Santos VM, Cortes ME, Reis PVM, Santos VL, Pilo-Veloso D, Verly RM, de Lima ME, Resende JM (2017) Ocellatin peptides from the skin secretion of the South American frog <i>Leptodactylus labyrinthicus</i> (Leptodactylidae): characterization, antimicrobial activities and membrane interactions. <i>Journal of Venomous Animals and Toxins including Tropical Diseases</i>. 23(4). DOI 10.1186/s40409-017-0094-y</p> <p>Isbister GK (2001) Venomous fish stings in Tropical Northern Australia 19(7):561-565.</p> <p>Leviton AE, Wogan GOU, Koo MS, Zug GR, Lucas RS, Vindum JV (2003) The Dangerously Venomous Snakes of Myanmar Illustrated Checklist with Keys. <i>Proceedings of the California Academy of Sciences</i> 54:22-27.</p> <p>Ligabue-Braun R, Carlini CR (2015) Poisonous birds: A timely review. <i>Toxicon</i> 99:102-108.</p> <p>Ligabue-Braun R, Verli H, Carlini CR (2012) Venomous mammals: a review. <i>Toxicon</i> 59: 680-695.</p> <p>Mackessy SP (2021) <i>Handbook of venoms and toxins of Reptiles</i>. CRC Pres Taylor & Francis Group. Boca Raton, London & New York. 2nd edition</p> <p>Meier J, White J (2008) <i>Handbook of clinical toxicology and of animal venoms and poisons</i>. CRC Press</p> <p>Ming-Yi L, Ruey-Jen H (1997) Toxoids and Antivenoms of Venomous Snakes in Taiwan. <i>Journal of Toxicology: Toxin Reviews</i> 16(3):163-175.</p> <p>Noguchi T, Arakawa O, Takatani T (2006) TTX accumulation in pufferfish. <i>Comparative Biochemistry and Physiology, Part D</i> 145-152.</p> <p>Warrel DA (2005) Treatment of bites by adders and exotic venomous snakes. <i>BMJ</i> 331:1244-1247.</p>
<p>Öğretim Üyesi (Üyeleri) / Faculty Member (Members)</p>	<p>Prof. Dr. Özlem ÇAKICI</p>	<p>Prof. Dr. Özlem ÇAKICI</p>

ÖĞRENME ÇIKTILARI / LEARNING OUTCOMES

1	1- Hayvan zehirlerinin önemli biyolojik işlevlerini öğrenme	1) To learn the biological function of animal venoms
2	2- Toksinoloji biliminin önemini kavrayabilme	2) To comprehend the importance of the science of toxinology
3	3- Zehirli omurgalı hayvanları tanıma	3) Identifying venomous vertebrates
4	4-Öğrenilen bilgiler ile çevremizdeki zehirli omurgalı hayvanlarla ilgili temel bir izleme araştırması tasarlayabilme	4) To design a monitoring study on venomous vertebrate animals in our environment based on the information learned

HAFTALIK DERS İÇERİĞİ / DETAILED COURSE OUTLINE

Hafta / Week					
1	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Toksinoloji hakkında bilgilendirme				
	Information about toxinology				
2	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli Omurgalı Hayvanlar -Balıklar (Pisces)				
	Venomous Vertebrate Animals -Fish (Pisces)				
3	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli Omurgalı Hayvanlar -Balıklar (Pisces)- devam				
	Venomous Vertebrate Animals -Fish (Pisces)-continue				
4	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli Omurgalı Hayvanlar -Kurbağalar: Semenderler (Urodela, Amphibia)				
	Venomous Vertebrate Animals - Amphibians (Urodela, Amphibia)				
5	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli Omurgalı Hayvanlar -Kurbağalar: Kuyruksuz kurbağalar (Anura, Amphibia)				
	Venomous Vertebrate Animals - Amphibians (Anura, Amphibia)				

	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
6	Zehirli Omurgalı Hayvanlar -Zehirli kertenkeleler (Helodermatidae, Reptilia)				
	Venomous Vertebrate Animals -Lizards ((Helodermatidae, Reptilia)				
7	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli Omurgalı Hayvanlar -Yılanlar (Serpentes, Reptilia)				
	Venomous Vertebrate Animals -Snakes (Serpentes, Reptilia)				
8	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Arasınanav				
	Midterm Exam				
9	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Yılan zehirlerinin özellikleri				
	Properties of snake venoms				
10	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli Omurgalı Hayvanlar -Kuşlar (Aves)				
	Venomous Vertebrate Animals -Birds (Aves)				
11	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli Omurgalı Hayvanlar -Memeliler (Mammalia)				
	Venomous Vertebrate Animals -Mammals (Mammalia)				

	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
12	Zehirli Omurgalı Hayvanlar -Memeliler (Mammalia)-devam				
	Venomous Vertebrate Animals -Mammals (Mammalia)-continue				
13	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Çeşitli zehirlenme vakaları				
	Various cases of poisoning				
14	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Zehirli ısırıklar, sokmalar ve tedavileri				
	Venomous bites, stings and treatments				
15	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Ödev ve Sunumların Rapor Edilmesi				
	Reporting homework's				
16	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Final Sınavı				
	Final exam				

DEĞERLENDİRME / EVALUATION

Yarıyıl (Yıl) İçi Etkinlikleri / Term (or Year) Learning Activities	Sayı / Number	Katkı Yüzdesi / Percentage of Contribution (%)
Ara Sınav / Midterm Examination	1	100
Toplam / Total:	1	100
Başarı Notuna Katkı Yüzdesi / Contribution to Success Grade(%):		40

Yarıyıl (Yıl) Sonu Etkinlikleri / End Of Term (or Year) Learning Activities	Sayı / Number	Katkı Yüzdesi / Percentage of Contribution (%)
Final Sınavı / Final Examination	1	100
Toplam / Total:	1	100
Başarı Notuna Katkı Yüzdesi / Contribution to Success Grade(%):		60

Etkinliklerinin Başarı Notuna Katkı Yüzdesi(%) Toplamı / Total Percentage of Contribution (%) to Success Grade:		100
Değerlendirme Tipi / Evaluation Type:		

İŞ YÜKÜ / WORKLOADS

Etkinlikler / Workloads	Sayı / Number	Süresi (Saat) / Duration (Hours)	Toplam İş Yüğü (Saat) / Total Work Load (Hour)
Ara Sınav / Midterm Examination	1	1.00	1.00
Ara Sınav İçin Bireysel Çalışma / Individual Study for Mid term Examination	1	15.00	15.00
Bireysel Çalışma / Self Study	9	6.00	54.00
Derse Katılım / Attending Lectures	14	3.00	42.00
Final Sınavı / Final Examination	1	1.00	1.00
Final Sınavı için Bireysel Çalışma / Individual Study for Final Examination	1	20.00	20.00
Makale Kritik Etme / Criticising Paper	6	10.00	60.00
Okuma / Reading	14	3.00	42.00
Rapor Hazırlama / Report Preparation	1	10.00	10.00
Rapor Sunma / Report Presentation	1	3.00	3.00
Toplam / Total:	49	72.00	248.00

Dersin AKTS Kredisi = Toplam İş Yüğü (Saat) / 30.00 (Saat/AKTS) = 248.00/30.00 = 8.27 ~ / Course ECTS Credit = Total Workload (Hour) / 30.00 (Hour / ECTS) = 248.00 / 30.00 = 8.27 ~

PROGRAM VE ÖĞRENME ÇIKTISI / PROGRAM LEARNING OUTCOMES

Öğrenme Çıktıları / Learning Outcomes	Program Çıktıları / Program						
	1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.1.6	1.1.7
1.1- Hayvan zehirlerinin önemli biyolojik işlevlerini öğrenme / 1) To learn the biological function of animal venoms	5	4	4	4	4	4	4
2.2- Toksinoloji biliminin önemini kavrayabilme / 2) To comprehend the importance of the science of toxinology		4	4	4	4	4	4
3.3- Zehirli omurgalı hayvanları tanıma / 3) Identifying venomous vertebrates		5	5	5	5	5	5
4.4-Öğrenilen bilgiler ile çevremizdeki zehirli omurgalı hayvanlarla ilgili temel bir izleme araştırması tasarlayabilme / 4) To design a monitoring study on venomous vertebrate animals in our environment based on the information learned		5	5	5	5	5	5

Katkı Düzeyi / Contribution Level : 1-Çok Düşük / Very low, 2-Düşük / Low, 3-Orta / Moderate, 4-Yüksek / High, 5-Çok Yüksek / Very high