

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
Heinzelova 55
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Division:
Department / Clinic: Department of Veterinary Pathology
Email: isostaric@vef.hr
Register no.:
File no.:
Zagreb, September 4th, 2024.



190566	REPUBLIKA HRVATSKA		
Veterinarski fakultet u Zagrebu			
Primljeno:	04.09.2024		
Klasifikacijske oznaka	Org. jed.		
602-04/24-22/38	251-61-41;251-61-32;		
Urudžbeni broj	Prilozi	Vrijednos	
251-61-11-24-37	0	-	

COURSE SYLLABUS

Course name: GENERAL VETERINARY PATHOLOGY

Academic year 2024-2025

Course leader: Ivan-Conrado Šoštarić-Zuckermann, DVM, PhD, Associate Professor

Teachers: Andrea Gudan Kurilj (AGK), DVM, PhD, DECVP, Full Professor; Associate Professor; Ivan-Conrado Šoštarić-Zuckermann (ICŠZ), DVM, PhD, DECVP, Assistant Professor Lidija Medven Zagredišnik (LMZ) DVM, PhD

Associate teachers: Dunja Vlahović (DV), DVM, PhD, Assistant; Iva Ciprić (IC), DVM, Assistant; Ivana Mihoković Buhin (IMB), DVM, Assistant; Nikola Serdar (NS), DVM, Assistant

First day of classes: 8.10.2024.

Last day of classes: 20.12.2024.

Timetable for LECTURES academic year 2024-2024

LECTURES				
Date	Methodological unit	Teacher	Location / time	Literature
8.10.2024.	Introduction to Veterinary Pathology	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Lecture Room/Department of Veterinary Pathology/ 11.00-11.45 h	<ol style="list-style-type: none"> 1. J. F. Zachary: Pathologic Basis of Disease, 6th edition, Elsevier, Philadelphia, 2017. 2. V. Kumar, Abul K. Abbas, N. Fausto: Robbins and Cotran Pathologic Basis of Disease, 9th. Elsevier Saunders, Philadelphia, 2015. 3. D. O. Slauson, Cooper, B. J.: Mechanisms of Disease. 3th edition, Mosby, St. Louis, 2002. 4. Notes and presentations provided by lecturers.
	Reversible cell injury	Assist. Prof. Lidija Medven Zagradišnik	Lecture Room/Department of Veterinary Pathology/ 11.45-12.30 h	
9.10.2024.	Cell death: apoptosis	Assist. Prof. Lidija Medven Zagradišnik	Lecture Room/ Department of Veterinary Pathology/ 10.15-11.45 h	
10.10.2024.	Cell death: necrosis	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Lecture Room/ Department of Veterinary Pathology/ 10.15-11.45 h	
21.10.2024.	Chronic cell adaptations	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Lecture Room/ Department of Veterinary Pathology/ 10.15-11.00h	
	Circulatory disorders: general	Prof. Andrea Gudan Kurilj	Lecture Room/ Department of Veterinary Pathology/11.00-11.45 h	
23.10.2024.	Circulatory disorders: edema, hyperemia and congestion, hemostasis	Prof. Andrea Gudan Kurilj	Lecture Room/ Department of Veterinary Pathology/8.15-9.45 h	
24.10.2024.	Circulatory disorders: haemorrhage, thrombosis, DIK, embolization	Prof. Andrea Gudan Kurilj	Lecture Room/ Department of Veterinary Pathology/ 8.15-9.45 h	
07.11.2024.	Circulatory disorders: infarct, shock	Prof. Andrea Gudan Kurilj	Lecture Room/ Department of Veterinary Pathology/ 8.15-9.00 h	
	Acute inflammation: general	Assist. Prof. Lidija Medven Zagradišnik	Lecture Room/ Department of Veterinary Pathology/ 9.00-	

			9.45 h	
11.11.2024.	Acute inflammation: fluidic and cellular phase, effector cells, phagocytosis	Assist. Prof. Lidija Medven Zagradišnik	Lecture Room/ Department of Veterinary Pathology/ 10.00-11:30 h	
22.11.2024.	Acute inflammation: chemical mediators, reparative phase of acute inflammation	Assist. Prof. Lidija Medven Zagradišnik	Lecture Room/ Department of Veterinary Pathology/ 08.15-9.45 h	
29.11.2024.	Acute inflammation: morphologic classification of exudates	Assist. Prof. Lidija Medven Zagradišnik	Lecture Room/ Department of Veterinary Pathology / 8.15-9.00 h	
	Chronic inflammation: cellular mechanisms	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Lecture Room/ Department of Veterinary Pathology / 9.00-9.45 h	
4.12.2024.	Chronic inflammation: granulomatous inflammation; wound healing and angiogenesis	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Lecture Room/ Department of Veterinary Pathology/ 08.15-9.45 h	
6.12.2024.	Diseases of immunity: hypersensitivity reactions, amyloidosis	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Lecture Room/ Department of Veterinary Pathology/ 8.15-9.45 h	
10.12.2024.	Diseases of immunity: general features of autoimmune diseases	Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann	Lecture Room/ Physics/ 8.15-9.00 h	
	Neoplasia: general nomenclature; tumor characteristics; neoplastic transformation	Prof. Andrea Gudan Kurilj	Lecture Room/ Physics/ 9.00-9.45 h	
16.12.2024.	Neoplasia: heritable alterations; molecular determinants; mechanisms of carcinogenesis	Prof. Andrea Gudan Kurilj	Lecture Room/ Department of Veterinary Pathology/ 8.15-9.45 h	
18.12.2024.	Neoplasia: tumor immunity; tumor dissemination; paraneoplastic syndrome	Prof. Andrea Gudan Kurilj	Lecture Room/ Department of Veterinary Pathology/ 8.15-9.45 h	

Timetable for PRACTICALS academic year 2024-2025

PRACTICALS						
Date	Methodological unit	Teacher	Type of practical	Group	Location / time	Literature
11.10.2024.	Necropsy technique: an introduction	ICŠZ; DV; IMB	Clinical practicals	1,2,3	Necropsy hall/ 8.15-11.15 h	J. F. Zachary: Pathologic Basis of Disease, 6th edition, Elsevier, Philadelphia, 2017.
15.10.2024.	Necropsy technique: general principles	AGK; IC; DV	Clinical practicals	1,2,3	Necropsy hall/ 8.15-11.15 h	
16.10.2024.	Necropsy technique: the necropsy record	LMZ; IC; NS	Clinical practicals	1,2,3	Necropsy hall/ 13.15-16.15 h	
17.10.2024.	Necropsy technique: describing lesions	AGK; LMZ; IMB	Clinical practicals	1, 2, 3	Necropsy hall/ 13.15-16.15 h	Grabarević, Željko i Sabočanec, Ruža (ur.): Osnove razudbe domaćih životinja. Medicinska naklada, Zagreb, 2016. Notes provided by lecturers.
18.10.2024.	Necropsy technique: collection and submission of specimens for laboratory examination	NS; LMZ; DV	Clinical practicals	1,2,3	Necropsy hall/ 13.15-16.15 h	
23.10.2024.	Necropsy technique: tissue changes – normal anatomical structures and species variation	IC; ICŠZ; IMB	Clinical practicals	1,2,3	Necropsy hall/ 13.45-16.45 h	
28.10.2024.	Necropsy technique: physiological, senile and agonal changes	NS; DV; IC	Clinical practicals	1,2,3	Necropsy hall/ 8.15-11.15 h	
04.11.2024.	Necropsy technique: post mortem changes	ICŠZ; IC; AGK	Clinical practicals	1,2,3	Necropsy hall/ 11.30-14.30 h	

25.11.2024.	Necropsy technique: dissection and examination stage	DV, NS, IMB	Clinical practicals	1,2,3	Necropsy hall/ 13.30-16.30 h	
09.12.2024.	Necropsy technique: dissection and examination stage	NS; DV; AGK	Clinical practicals	1,2,3	Necropsy hall/ 12.00-15.00 h	
11.12.2024.	Necropsy technique: dissection, examination and recognition of pathological changes	LMZ; ICŠZ; IC	Clinical practicals	1,2,3	Necropsy hall/ 12.00-15:00h	
13.12.2024.	Necropsy technique: dissection, examination and recognition of pathological changes	DV; IMB; AGK	Clinical practicals	1,2,3	Necropsy hall/ 9.45-12.15 h	
18.12.2024.	Necropsy technique: dissection, examination and recognition of pathological changes	ICŠZ; IMB; IC	Clinical practicals	1,2,3	Necropsy hall/ 12.00-15.00 h	
19.12.2024.	Necropsy technique: dissection, examination and recognition of pathological changes	ICŠZ; LMZ; DV	Clinical practicals	1,2,3	Necropsy hall/ 12.00-15.00 h	
20.12.2024.	Colloquium	AGK; LMZ; IMB	Clinical practicals	1,2,3	Necropsy hall/ 8.15-11.15 h	

STUDENT OBLIGATIONS

Lecture attendance	The total number of lectures include 30 hours. During fifth semester student must be present on at least 15 hours (50%) of lectures to get minimal 3 points (each lecture hour is calculated as 0.2 points). A student can get a maximum of 6 points for this element.
Seminars attendance	
Practicals attendance	During the fifth semester, the student must attend at least 40 hours of practicals (the total number of hours of practicals is 60) in order to obtain a minimum of 8 points. A maximum of 12 points can be obtained from this element (if the student is present at all practicals).
Active participation in seminars and practicals	In this element, student must achieve a minimum of 5 points, and can achieve a maximum of 10 points. Each student has the obligation to perform at least two necropsies during semester, where success is scored as follows: 0-5 points (0 points = did not perform necropsy; 1 point = performed necropsy but showed insufficient knowledge of the theory and techniques; 2 points = performed necropsy, good knowledge of technique but lack of knowledge in theory; 3 points = performed necropsy, good knowledge of theory and techniques; 4 points = performed necropsy, very good knowledge of theory and techniques; 5 points = performed necropsy, excellent knowledge of the theory and technique). The range of 5 to 10 points student achieves by combining ie. adding two values earned by necropsies (eg. student carried out one necropsy at which he/she demonstrated good knowledge of theory and technique [3 points] and another one at which he/she demonstrated excellent knowledge of theory and technique [5 points], that way the student achieves 8 points from participation at practical).
Final exam	Minimal conditions for passing the first, second, third and fourth evaluation elements are all summed up and they are worth 36 points all together. In order to take the final exam a student must gain the 36 points. In order to pass the final exam, a student must achieve a minimum of 24 points. The maximum number of points on the final exam is 40.

	<p>The final exam consists of written and oral part. The written part of the exam is in essay form. It lasts 40 minutes and consists of 5 questions. Each question is scored with a maximum of 5 points. A minimum of 15 points is required to pass the written exam, and minimum of 2 points per each question should be achieved. Each question will have guidelines to clarify what is expected in the answer. A maximum of 25 is possible to get from written part of the exam. After scoring a written part of the exam, students who achieve a minimum of 15 points can access the oral part of the exam. Students who do not achieve the minimum score (15 points) on the written part of the exam, receive a negative grade and will not be able to access the oral part of the exam. Questions at the oral part of the exam are on the same principle as essay type question in the written part. The grade on the final exam is the one derived from the points that student has collected from the written and oral part of the exam. The maximum amount of points in final exam is 40. The distribution of grades is done according to the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine and the Course Syllabus. Note: on the final exam students should know the material of the colloquiums, and they can be asked questions from colloquiums.</p>
Examination requirements	<p>Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine. Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. Article 41: a student can justifiably be absent from up to 50 % of the lectures; 30% of the seminars and 30 % of the practicals.</p>

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	<p>During the semester, two colloquiums will be held (1. Written colloquium from the chapter "Acute inflammation"; 2. Practical examination of the Necropsy).</p> <p>Written colloquium is from the chapter "Acute and chronic inflammation". In this colloquium it is necessary to achieve at least 10 points; maximum possible points is 16. Colloquium consists of 32 questions; in order to achieve the minimum number of points it is required to answer 20 questions (each correct answer is awarded 0.5 points). The incorrect answers will be counted as negative points (so the total score will be reduced for the number of incorrect answers, while the unanswered questions will not be scored). The colloquium will be held at the Department of Veterinary Pathology. It is required to apply for the colloquiums with the internal application forms that are provided in the student administration office. Dates of colloquiums "Acute inflammation" and Application deadlines are:</p> <p>1. Term: 4.12.2024. at 7.30 (Application until 2.12.2024. at 12.00 AM).</p>
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	<ol style="list-style-type: none"> Term: 12.12.2024. at 7.30 (Application until 10.12.2024. at 12.00 AM). Term: 18.12.2024. at 7.30 (Application until 16.1.2024. at 12.00 AM). <p>The second colloquium is a practical examination of the necropsy. From this colloquium it is necessary to achieve a minimum of 10 points, and maximum possible points is 16. Practical examination of the necropsy is performed in the Necropsy hall by examining the practical and theoretical knowledge of the necropsy.</p> <p>Dates of colloquiums are:</p> <ol style="list-style-type: none"> Term: 20.12.2024. at 8:30 (last practicals, Necropsy hall – application is not required). Term: 9.1.2025. at 8.00 (Application until 7.1.2025. at 12.00 AM). Term: 23.1.2025. at 8.00 (Application until 17.1.2025. at 12.00 AM).
Final exams (dates)	4.11.2024.; 4.12.2024.; 5.2.2024.; 14.2.2024.
Form of final exam	Written and Oral exam.

LITERATURE

Obligatory literature	<ol style="list-style-type: none"> J. F. Zachary: Pathologic Basis of Disease, 6th edition, Elsevier, Philadelphia, 2017. D. O. Slauson, Cooper, B. J.: Mechanisms of Disease. 3th edition, Mosby, St. Louis, 2002. Notes and presentations provided by lecturers.
Optional literature	<ol style="list-style-type: none"> V. Kumar, Abul K. Abbas, N. Fausto: Robbins and Cotran Pathologic Basis of Disease, 9th. Elsevier Saunders, Philadelphia, 2015. Grabarević, Željko i Sabočanec, Ruža (ur.): Osnove razudbe domaćih životinja. Medicinska naklada, Zagreb, 2016.

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	Upon completion of this course, students will acquire knowledge of general pathology and pathology of organ systems, which is necessary to follow further classes in clinical subjects. The ultimate goal is that upon completion of the study students can recognize the pathological process and make the correct diagnosis in order to choose appropriate therapy, or if the animals die, in the correct way (dissection and
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Learning outcomes	<p>other additional laboratory tests) make an accurate diagnosis and thus act preventively in other animals .</p> <p>After successful completion of the course the student will be able to:</p> <ul style="list-style-type: none"> - Explain the origin and development of diseases of basic pathological processes at the cellular level. - Recognize and interpret pathological changes in different tissues and organs. - Classify and categorize different pathological changes. - Perform necropsy of domestic, wild, exotic and laboratory animals.
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GRADING SCHEME

<i>Points</i>	<i>Grade</i>
Up to 59	1 (F)
60-68	2 (E)
69-76	2 (D)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

Course leader:

Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann, DECV



Head of Department/Clinic:

Assoc. Prof. Ivan-Conrado Šoštarić-Zuckermann, DECV



Note: The course leader is required to submit a Course Syllabus to all teachers and associates pertaining to the Course

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES,
SEMINARS and PRACTICALS**

Type of activity	Minimum number of points	Maximum number of points
Lectures attendance	3	6
Seminar attendance	4	6
Practicals attendance	4	6
Active participation in seminars and practicals	5	10
Continuous knowledge checking (mid-terms)	20	32
Final exam	24	40
TOTAL	60	100

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH LECTURES and
SEMINARS**

Type of activity	Minimum number of points	Maximum number of points
Lecture attendance	3	6
Practicals attendance	8	12
Active participation in practicals	5	10
Continuous knowledge checking (mid-terms)	20	32
Final exam	24	40
TOTAL	60	100

**GRADING AND EVALUATION OF STUDENT WORK ON COURSES WITH SEMINARS and
EXERCISES**

Type of activity	Minimum number of points	Maximum number of points
Seminar / practicals attendance	11	18
Active participation in seminars and practicals	5	10
Continuous knowledge checking (mid-terms)	20	32
Final exam	24	40
TOTAL	60	100

Activities - General Veterinary Pathology (1/3)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
08/10/2024	11:00	11:45	p01 Introduction	5E-1, 5E-2, 5E-3		0:45	Šoštarić Z. I.	P_patologija
08/10/2024	11:45	12:30	p02 Reversible cell injury	5E-1, 5E-2, 5E-3		0:45	Medven Z. L.	P_patologija
09/10/2024	10:15	11:45	p03 Apoptosis	5E-1, 5E-2, 5E-3		1:30	Medven Z. L.	P_patologija
10/10/2024	10:15	11:45	p04 Necrosis	5E-1, 5E-2, 5E-3		1:30	Šoštarić Z. I.	P_patologija
11/10/2024	8:15	11:15	v01 Necropsy technique 1	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
15/10/2024	8:15	11:15	v02 Necropsy technique 2	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
16/10/2024	13:15	16:15	v03 Necropsy technique 3	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
17/10/2024	13:15	16:15	v04 Necropsy technique 4	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
18/10/2024	13:15	16:15	v05 Necropsy technique 5	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
21/10/2024	10:15	11:00	p05 Chronic cell adaptation	5E-1, 5E-2, 5E-3		0:45	Šoštarić Z. I.	P_patologija
21/10/2024	11:00	11:45	p06 Circulatory disorders: general	5E-1, 5E-2, 5E-3		0:45	Gudan K.	P_patologija
23/10/2024	8:15	9:45	p07 Edema, hyperemia	5E-1, 5E-2, 5E-3		1:30	Gudan K.	P_patologija
23/10/2024	13:45	16:45	v06 Necropsy technique 6	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
24/10/2024	8:15	9:45	p08 Haemorrhage, thrombosis	5E-1, 5E-2, 5E-3		1:30	Gudan K.	P_patologija
28/10/2024	8:15	11:15	v07 Necropsy technique 7	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija

Activities - General Veterinary Pathology (2/3)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
04/11/2024	11:30	14:30	v08 Necropsy technique 8	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
07/11/2024	8:15	9:00	p09 Infarct, shock	5E-1, 5E-2, 5E-3		0:45	Gudan K.	P_patologija
07/11/2024	9:00	9:45	p10 Acute inflammation - general	5E-1, 5E-2, 5E-3		0:45	Medven Z. L.	P_patologija
11/11/2024	10:00	11:30	p11 Acute inflammation - cellular reaction	5E-1, 5E-2, 5E-3		1:30	Medven Z. L.	P_patologija
22/11/2024	8:15	9:45	p12 Biomediators of inflammation	5E-1, 5E-2, 5E-3		1:30	Medven Z. L.	P_patologija
25/11/2024	13:30	16:30	v09 Necropsy technique 9	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
29/11/2024	8:15	9:00	p13 Classification of inflammation	5E-1, 5E-2, 5E-3		0:45	Medven Z. L.	P_patologija
29/11/2024	9:00	9:45	p14 Chronic inflammation - mechanism	5E-1, 5E-2, 5E-3		0:45	Šoštarić Z. I.	P_patologija
04/12/2024	8:15	9:45	p15 Granulomatous inflammation	5E-1, 5E-2, 5E-3		1:30	Šoštarić Z. I.	P_patologija
06/12/2024	8:15	9:45	p16 Hypersensitivity reactions	5E-1, 5E-2, 5E-3		1:30	Šoštarić Z. I.	P_patologija
09/12/2024	12:00	15:00	v10 Necropsy technique 10	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
10/12/2024	8:15	9:00	p17 Autoimmune diseases	5E-1, 5E-2, 5E-3		0:45	Šoštarić Z. I.	P_fizika
10/12/2024	9:00	9:45	p18 Tumors - introduction	5E-1, 5E-2, 5E-3		0:45	Gudan K.	P_fizika
11/12/2024	12:00	15:00	v11 Necropsy technique 11	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija

Activities - General Veterinary Pathology (3/3)								
Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
13/12/2024	9:45	12:45	v12 Necropsy technique 12	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
16/12/2024	8:15	9:45	p19 Tumors - carcinogenesis	5E-1, 5E-2, 5E-3		1:30	Gudan K.	P_patologija
18/12/2024	8:15	9:45	p20 Tumors - immunity, dissemination	5E-1, 5E-2, 5E-3		1:30	Gudan K.	P_patologija
18/12/2024	12:00	15:00	v13 Necropsy technique 13	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
19/12/2024	12:00	15:00	v14 Necropsy technique 14	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
20/12/2024	8:15	11:15	v15 Necropsy technique 15	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
Total: 35						67:30		

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
13/12/2024	9:45	12:45	v12 Necropsy technique 12	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
16/12/2024	8:15	9:45	p19 Tumors - carcinogenesis	5E-1, 5E-2, 5E-3		1:30	Gudan K.	P_patologija
18/12/2024	8:15	9:45	p20 Tumors - immunity, dissemination	5E-1, 5E-2, 5E-3		1:30	Gudan K.	P_patologija
18/12/2024	12:00	15:00	v13 Necropsy technique 13	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
19/12/2024	12:00	15:00	v14 Necropsy technique 14	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
20/12/2024	8:15	11:15	v15 Necropsy technique 15	5E-1, 5E-2, 5E-3		3:00	Nastavnici na predmetu	S_patologija
Total: 35						67:30		