In the Name of God

Hamadan University of Medical Sciences and Health Services
Educational Deputy of the University
Center for Studies and Development of Medical Sciences Education

Theory/Practical Lesson Plan Form

Dear Colleagues,

As the teaching-learning process is one that requires careful planning to achieve its objectives, the preparation of a lesson plan at the beginning of the educational process (as a map and guide for instructors and students) is essential. It serves as one of the main tools for the educational activities of instructors. Therefore, we kindly ask all instructors to pay utmost attention to completing the lesson plan.

Course and Instructor Details (Completing all items in this section is essential)

Course Information

Field	Details
Course Title	Physiology of Respiration
Instructor	Dr. Parisa Habibi
Course Coordinator	Dr. Parisa Habibi
Head of Department	Dr. Siamak Shahidi
Credit Hours	Theory: 0.58 units; Practical: 0.12 units
Program & Level	Doctor of Medicine (General) – Professional Doctorate
Teaching Location	Classrooms, School of Medicine

Session-by-Session Syllabus

Session	Topic(s)	Expected Learning Outcomes (Behavioral)	Learning Domain	Teaching Method(s)	Duration	Teaching Aids	Assessment Method(s)
1	Mechanics of Breathing – Inspiration and Expiration	1. Define structure of the respiratory system and related terminology. 2. Explain structural–functional coordination of respiratory components. 3. Describe mechanisms of inspiration and expiration.	Cognitive	Lecture, educational video, Q&A	2 hrs	Video projector, computer, whiteboard, Power Point, video clips	Quiz, oral questioning
2	Pulmonary Ventilation	1. Define spirometry and differences between lung volumes and capacities. 2. Calculate basic lung volumes and pulmonary ventilation. 3. Describe alveolar ventilation and relevant equations. 4. Explain measurement of anatomical and physiological dead space.	Cognitive	Lecture, educational video, Q&A	2 hrs	Video projector, computer, whiteboard, Power Point, video clips	Quiz, oral questioning
3	Elasticity and Compliance of the Lungs; Pulmonary Circulation	1. Explain airway resistance, influencing factors (neural, local), lung pressure, compliance, and surfactant role. 2. Describe sympathetic/paras	Cognitive	Lecture, educational video, Q&A	2 hrs	Video projector, computer, whiteboard, Power Point,	Quiz, oral questioning

		ympathetic effects on airway resistance. 3. Explain generation of negative intrapleural pressure. 4. Describe pulmonary blood flow zones (1–3) and influencing factors. 5. Compare systemic vs pulmonary circulations in pressure, flow, and resistance. 6. List Starling's forces in pulmonary capillaries. 7. Explain pulmonary edema and contributing factors.				video clips	
4	Gas Exchange in the Lungs; O_2 and CO_2 Transport Between Lungs and Tissues	1. Explain respiratory gas exchange in lungs with relevant formulas and draw corresponding curves. 2. Describe diffusion process, influencing factors, partial pressures of gases, and diffusion coefficients. 3. Explain gas transport in blood with formulas and draw curves.	Cognitive	Lecture, educational video, Q&A	2 hrs	Video projector, computer, whiteboard, Power Point, video clips	Quiz, oral questioning
5	Ventilation–Perfusion Ratio;	1. Explain ventilation–perfusion ratio, related	Cognitive	Lecture, educational	2 hrs	Video projector,	Quiz, oral

	Control of Breathing	formulas, and draw the curve. 2. Explain hemoglobin buffering of oxygen tissue pressure and factors influencing oxygen–hemoglobin dissociation curve shifts. 3. Identify components of respiratory control and describe their roles.		video, Q&A		computer, whiteboard, Power Point, video clips	questioning
6 (Practical)	Spirometry Test	Perform spirometry with required precautions and present interpretation as a lab report.	Psychomotor	Lecture + laboratory demonstration	2 hrs	Computer, Power Point, video projector, whiteboard, spirometer	Written quiz, lab report

Grading Scheme

Assessment Type	Assessment Tool	Points
Quiz	Written test	5 points
Project/Presentation	Seminar presentation and oral Q&A	5 points
Midterm Exam	Written electronic test	30 points
Final Exam	Written electronic test	60 points
Other	—	—
Total	—	**100 points**

References

Main

- Guyton & Hall, *Textbook of Medical Physiology*, 2021 Edition (Latest Print)

Supplementary

- Ganong's *Review of Medical Physiology*, latest edition (2021)
- Berne & Levy, *Physiology*, latest edition (2021)