



MEDICINE AND SOCIETY

SIXTH YEAR OF STUDIES

Academic year 2025/2026.

PAIN MEDICINE

Subject:

PAIN MEDICINE

The course is evaluated with 4 ECTS. There are 3 classes of active teaching per week (2 classes of lectures and 1 class of work in a small group).

TEACHERS and ASSOCIATES:

	Name and surname	Vocation	email
1.	Svetlana Miletić-Drakulić	Full professor	mileticdrakulic@gmail.com
2.	Nataša Đorđević	Full professor	natashadj2002@yahoo.com
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5.	Nenad Zornić	Associate professor	nenadzornic@gmail.com
6.	Vojin Kovačević	Associate professor	vojinkg@gmail.com
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8.	Stevan Erić	Associate in teaching	stevan_kg@yahoo.com

COURSE STRUCTURE

Module	Name of the module	week	Lectures	Work in a small group	teacherκ- module manager
1	Physiology and psychology of pain. Classification and assessment of pain. Acute pain.	5	2	1	Prof. Nenad Zornić
2	Pharmacological and non-pharmacological pain therapy	5	2	1	Prof. Nataša Đorđević
3	Cancer pain, neuropathic pain, chronic pain.	5	2	1	Prof. Vojin Kovačević
Course leader: Prof. Vojin Kovačević					
					Σ 30+15=45

Work in small groups is held in 3 blocks, according to a marked schedule. **The first block** of work in a small group has 5 school hours, it consists of mastering the skills of taking an anamnesis and physical examination of a patient in pain, keeping a pain diary, using pain assessment scales and measuring pain intensity, as well as the skills of treating acute postoperative and post-traumatic pain. It is held in the Department of Anesthesia and Resuscitation and Department of Psychiatry. **The second block** of work in a small group lasts 5 school hours, and is related to mastering the basics of pain pharmacotherapy, creating an individualized treatment plan, critically evaluating the effectiveness and side effects of drugs used in pain therapy, based on examples from clinical practice. It is held in the Pharmacology classroom. **The third block** of work in a small group is carried out in the Department of Neurosurgery, Department of Neurology and Department of Anesthesia and Resuscitation. This block consists in introducing students to the modalities of physical medicine used in the treatment of pain (active and passive exercises, manual therapy, electrical stimulation (TENS), etc.). Also invasive interventional procedures will be discussed and presented to students.

ASSESSMENT::

The student masters the subject in modules. The grade is equivalent to the number of points earned (see tables). Points are earned in two ways:

ACTIVITY DURING THE LESSON: In this way, the student can earn up to 30 points, with a maximum of 10 points after the first block of exercises, a maximum of 10 points after the second block and a maximum of 10 points after the third block of exercises. Knowledge of the material, preparation for working in a small group, solving clinical scenarios and teamwork are evaluated.

FINAL TESTS BY MODULE: In this way, the student can gain up to 70 points according to the attached table.

MODULE		MAXIMUM POINTS		
		Activity during class	final test	Σ
1	Physiology and psychology of pain. Classification and assessment of pain intensity. Acute pain.	10		
2	Pharmacological and pharmacological pain therapy	10		
3	Cancer pain, neuropathic pain, chronic pain	10		
Σ			70	100

The final grade is formed as follows:

In order to pass the course, the student must obtain a minimum of 51 points and pass all modules.

To pass the module the student must:

1. obtains more than 50% points in that module
2. acquires more than 50% of the points provided for the activity in teaching in each module
3. pass the module test, i.e. have more than 50% correct answers.
4. obtain more than 50% points on the practical skills test

number of points won	grade
0 - 50	5
51 - 60	6
61 - 70	7
71 - 80	8
81 - 90	9
91 - 100	10

FINAL TEST

0-70 points

The test has 35 questions
Each question is worth 2 points

LITERATURE:

TITLE OF THE TEXTBOOK	THE AUTHORS	PUBLISHER	БИБЛИОТЕКА
Терапија бола	Јасна Јевђић, уредник	Факултет медицинских наука у Крагујевцу; 2020.	-
Hronični bol : mehanizmi, dijagnostika i lečenje	Pjević M., editor	Medicinski fakultet Novi Sad; 2017	
Bol- uzroci i liječenje	Jukić M, Majerić Kogler V, Fingler M, editors	Medicinska naklada; 2010	
Farmakoterapija bola: analgetici i njihovi adjuvansi	Jovanović J., editor	Elit medica; 2007	
Fundamentals of Pain Medicine: How to Diagnose and Treat your Patients	Hoppenfeld J.D. editor	Lippincott Williams and Wilkins; 2014	

All lectures and material for small group work are available on the website of the Faculty of Medical Sciences: www.medf.kg.ac.rs

THE PROGRAM:

TEACHING UNIT 1 (FIRST WEEK)

physiology and classification of pain)

PHYSIOLOGY AND CLASSIFICATION OF PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none">• Transmission of signals from nociceptors to the CNS; interactions with other centers at the supra-spinal or bulbar level that generate the subjective perception of pain.• principles of peripheral and central sensitization• mechanisms for inhibiting pain• classification of pain into acute and chronic according to duration• Classification of pain into nociceptive and neuropathic pain	<ul style="list-style-type: none">• Determining the type of pain based on the length of its duration and its characteristics (dull, pressure-like, pulling, throbbing, persistent, spasmodic, stabbing, burning, "pins and needles").• Taking a structured medical history - records information about pain (quality, localization, intensity, onset and duration, aggravating and alleviating factors)• Physical examination - location of pain and radiation diagram• Recognition of other neurological signs and symptoms

TEACHING UNIT 2 (SECOND WEEK)

CLINICAL EVALUATION OF PAIN. SCALE FOR ASSESSMENT OF PAIN INTENSITY.

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none">• numerical scales for evaluating the intensity of pain• visual analogue scales (NRS and VAS)• Pain questionnaires (German Pain Questionnaire DSF Deutcher Smerfrageboren. DGSS.org), Brief Pain Inventory (BPI), Symptom Checklist (SCL-90R), etc.	<ul style="list-style-type: none">• Use of questionnaires, pain diaries, and analog scales to supplement history and physical examination.• make therapeutic decisions based on the values of the scales (intervention at > 3/10, emergency > 7/10)

TEACHING UNIT 3 (THIRD WEEK)

MENTAL, PSYCHOLOGICAL AND SOCIAL FACTORS IN THE DEVELOPMENT AND MAINTENANCE OF PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none">• Pain as a cause of mental and psychological disorders (depressive, somatoform and anxiety disorders)• mental disorders that manifest through painful syndromes	<ul style="list-style-type: none">• screening for general psychological changes, including mood, motivation, sleep quality, as well as recording reactive behavior to pain, such as social withdrawal.• Communication with the patient - evidence of unusually stressful life events and circumstances at the time of onset of pain are relevant for the differentiation of somatoform disorders

TEACHING UNIT 4 (FOURTH WEEK)

POST-TRAUMATIC PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • Pathophysiological aspects of acute post-traumatic pain (neuroendocrine response to trauma and pain) • specificities of drug therapy and regional analgesia techniques in the treatment of post-traumatic pain and their limitations. 	<ul style="list-style-type: none"> • Measurement of pain intensity with numerical scales • Routes of drug administration in a traumatized patient • Choice of analgesics in relation to pain intensity • Opioid dose titration • monitoring the effectiveness of therapy and, if necessary, adjusting the standard analgesic scheme to each individual patient

TEACHING UNIT 5 (FIFTH WEEK)

POST-OPERATIVE PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • systemic negative effects of postoperative pain • Pharmacotherapy and nerve blocks suitable for treating pain after various surgical interventions • non-pharmacological methods of treating postoperative pain - physiatry methods, acupuncture, relaxation techniques • preemptive analgesia in perioperative pain therapy. 	<ul style="list-style-type: none"> • first-line analgesia: continuous analgesia at regular fixed intervals, or alternatively patient-controlled analgesia (PCA), • on-demand analgesia (rescue drug): supplementary first-line treatment, with a fixed safety interval before giving an additional dose • practice on phantoms of advanced post-operative pain treatment techniques: spinal and epidural analgesia, nerve plexus blocks

TEACHING UNIT 6 (SIXTH WEEK)

OPIOIDS IN PAIN THERAPY

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • Pharmacodynamics and pharmacokinetics of opioids (onset of action, bioavailability, half-life, calculation of dosing intervals, metabolism) • Routes of administration for different indications • Adverse effects of opioids • Opiophobia and addiction 	<ul style="list-style-type: none"> • Opioid dose titration • Different routes of opioid administration in relation to pain intensity, type of opioid and indication • Antagonizing the effects of opioids

TEACHING UNIT 7 (SEVENTH WEEK)

NON-STEROID ANTI-INFLAMMATORY DRUGS, PARACETAMOL SOX-INHIBITORS IN PAIN THERAPY

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • Mechanism of action, indications, contraindications and side effects in the use of non-steroidal anti-inflammatory drugs, paracetamol and COX-inhibitors • their value within analgesic regimes - as an element of the "pain scale" 	<ul style="list-style-type: none"> • monitoring of risk groups of patients for the occurrence of complications - ulcer, gastrointestinal bleeding • determination of contraindications for use in individual patients due to the pharmacokinetic properties of the most important active agents (acetylsalicylic acid, diclofenac, ibuprofen, naproxen, paracetamol), <ul style="list-style-type: none"> • in risk groups, the use of more tolerant long-term alternatives: metamizole or paracetamol (weak inhibitors of cyclooxygenase).

TEACHING UNIT 8 (EIGHTH WEEK)

CO-ANALGESICS (ANTIDEPRESSANTS, ANTI-EPILEPTICS) PHARMACOTHERAPY OF NEUROPATHIC PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • indications for the use of co-analgesics, selection and titration of co-analgesics doses • tricyclic antidepressants (indications, mechanism of action, side effects) • anticonvulsants (indications, mechanisms of action, side effects) 	<ul style="list-style-type: none"> • recognition of the side effects of the use of tricyclic antidepressants in patients: cardiac conduction disorders, orthostatic hypotension, dry mouth, increased appetite, weight gain, sedation, constipation, difficulty urinating, acute glaucoma) • recognition of side effects of anticonvulsant administration in patients: dizziness, sedation, toxic effects on the liver, blood dyscrasias, hyponatremia

TEACHING UNIT 9 (NINTH WEEK)

PHYSICAL THERAPY IN THE TREATMENT OF PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • Indications, contraindications, basic characteristics of physical therapy in the treatment of pain: active exercises; manual therapy; application of heat; electrotherapy: low-frequency currents (faradic current), medium-frequency currents (IFS, TENS), sinusoidally modulated currents, high-frequency currents; • Acupuncture 	<ul style="list-style-type: none"> • Performing different types of active exercises in pain • Heat application technique • Technique of application of galvanic current, diadynamic currents, interference currents, TENS therapy. • Dosing of alternating currents • Basics of acupuncture

TEACHING UNIT 10 (TENTH WEEK)

INVASIVE TECHNIQUES IN THE TREATMENT OF PAIN

lectures 2 hours	work in a small group 1 hour

- Indications, benefits and limitations of basic invasive techniques in pain therapy: epidural and plexus continuous analgesia, nerve blocks and destructive neurolysis.

- Familiarize yourself with the techniques of performing and placing catheters epidurally, in the vicinity of nerve plexuses and individual nerves. Techniques of neurolysis.

UNIT 11 (ELEVENTH WEEK)

CANCER PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • Etiology of cancer pain, pain related to cancer, pain related to cancer therapy • Cancer pain treatment • Indications for the use of co-analgesics and invasive methods of pain therapy 	<ul style="list-style-type: none"> • Distinguishing pain related to cancer, cancer therapy (eg after cancer surgery) and pain independent of cancer (eg headache) • Application of the Pain Relief Ladder in the treatment of cancer pain • application of national regulations in writing prescriptions for opioids

UNIT 12 (Twelfth Week)

NEUROPATHIC PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • Cause, symptomatology and treatment of neuropathic pain (diabetic polyneuropathy, herpes zoster), stroke pain, multiple sclerosis and spinal injuries) 	<ul style="list-style-type: none"> • Recognizing the typical localization and distribution of pain in polyneuropathy • Recognizing symptoms of herpes zoster, characteristics and localization of pain • Setting indications for the use of at least two classes of co-analgesics and two drugs from each class in the treatment of neuropathic pain

TEACHING UNIT 13 (THIRTEENTH WEEK)

HEADACHE

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none"> • Causes, symptoms and treatment of headaches • Types and classification of headaches (migraine and tension headache) • Headaches due to overuse of medication • Pharmacotherapy of headaches 	<ul style="list-style-type: none"> • Recognizing the symptoms of certain types of headache • The student considers the criteria for the diagnosis of drug-induced headache • Combining analgesics, physical and behavioral therapy in the treatment of headaches

TEACHING UNIT 14 (FOURTEENTH WEEK)

CHRONIC NON-SPECIFIC BACK PAIN

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none">• Frequency, prevalence and socio-economic importance of back pain.• Etiology and differential diagnosis of specific and non-specific back pain• Principles of diagnosis and treatment.• Risks of interventional procedures used in the treatment of back pain• Goals of back pain therapy	<ul style="list-style-type: none">• Application of an element of the multimodal concept of pain management• The student considers the use of drugs (analgesics / co-analgesics), active physiotherapy based on exercises, application of heat and cold, TENS and acupuncture• Patient education, assessment and promotion of pain management strategies, relaxation techniques

TEACHING UNIT 15 (FIFTEENTH WEEK)

COMPLEX REGIONAL PAIN SYNDROMES

lectures 2 hours	work in a small group 1 hour
<ul style="list-style-type: none">• Etiology, pathophysiology, clinical picture, diagnosis• Prognosis and treatment of complex regional pain syndromes	<ul style="list-style-type: none">• Physical therapy: passive and active exercises, cryotherapy, massage, TENS• Combining, dosing and monitoring the effect and side effects of pharmacotherapy: analgesics, glucocorticoids, antidepressants, antiepileptics, bisphosphonates

LECTURE SCHEDULE

**HALL ON THE 8TH FLOOR of
the Clinical Centre Kragujevac**

MONDAY

13:15 - 14:45

SCHEDULE OF EXERCISES

**INSTITUTE FOR EMERGENCY
MEDICAL ASSISTANCE**

15:00 - 15:45

[Schedule of lectures, practical classes and tests – academic calendar](#)

SCHEDULE OF LECTURES FOR THE COURSE OF PAIN MEDICINE

modul	week	type	method unit name	teacher
1	1	Lecture	Physiology and classification of pain	Prof. Zornic Nenad
1	2	Lecture	Clinical evaluation of pain. Scales for assessing pain intensity	Prof. Milica Borovčanin
1	3	Lecture	Mental, psychological and social factors in the development and maintenance of pain	Prof. Milica Borovčanin
1	4	Lecture	Post-traumatic pain	Prof. Zornic Nenad
1	5	Lecture	Postoperative pain	Prof. Zornic Nenad
1	1-5	Practice		Prof. Zornic Nenad Prof. Milica Borovčanin Erić Stevan MD
2	6	Lecture	Opioids in pain therapy	Prof. Dejana Ružić Zečević
2	7	Lecture	Non-steroidal anti-inflammatory drugs, paracetamol, COX-inhibitors in pain therapy	Prof. Nataša Đorđević
2	8	Lecture	Co-analgesics (antidepressants, antiepileptics), pharmacotherapy of neuropathic pain	Prof. Dr Srđan Stefanović
2	9	Lecture	Physical therapy in the treatment of pain	Prof. Vojin Kovačević
2	10	Lecture	Invasive methods in the treatment of pain	Prof. Vojin Kovačević
2	6-10	Practice		Prof. Nataša Đorđević Prof. Dr Srđan Stefanović Prof. Dejana Ružić Zečević Prof. Vojin Kovacevic
3	11	Lecture	Cancer pain	Prof. Nenad Zornić
3	12	Lecture	Neuropathic pain (diabetic polyneuropathy, postherpetic neuralgia)	Prof. Svetlana Miletić Drakulić
3	13	Lecture	Headaches	Prof. Svetlana Miletić Drakulić

SCHEDULE OF LECTURES FOR THE COURSE OF PAIN MEDICINE

modul	week	type	method unit name	teacher
3	14	Lecture	Chronic non-specific back pain	Prof. Vojin Kovačević
3	15	Lecture	Complex regional pain syndromes	Prof. Nenad Zornić
3	11-15	Practice		Prof. Svetlana Miletić Drakulić Prof. Zornic Nenad Prof. Vojin Kovacevic Erić Stevan MD