

# Recommended pass through the study plan

## Name of the pass: Biomedical informatics 20/21, 21/22, 22/23

Faculty/Institute/Others:

Department:

Pass through the study plan: Biomedical informatics

Branch of study guaranteed by the department: Welcome page

Guarantor of the study branch:

Program of study: Informatics and Cybernetics in Health Care

Type of study: Bachelor full-time

Note on the pass: Informaci o p edepsaném minimálním po tu PV p edm t pro konkrétní jednotlivé semestry najdete v odpovídajícím studijním plánu specializace.

**Coding of roles of courses and groups of courses:**

P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV - compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

**Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):**

KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

Number of semester: 1

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
F7PBKALP	<b>Algorithmization and Programming</b> <i>Pavel Smr ka, Tomáš Funda, Tomáš Veselý, Lenka Hanáková Tomáš Funda Pavel Smr ka (Gar.)</i>	Z,ZK	6	2P+2C	Z	z
F7PBKAJ1	<b>English I.</b> <i>Eva Maxová, Eva Moty ková Eva Moty ková Eva Moty ková (Gar.)</i>	KZ	2	2S	Z	z
17BOZP	<b>Occupational Safety and Health, Fire Protection and First Aid</b> <i>Petr Kudrna Petr Kudrna Petr Kudrna (Gar.)</i>	Z	0	1P	Z	z
F7PBKKT	<b>Communication Technology</b> <i>Tomáš Funda, Tomáš Veselý, Karel Hána, Martin Vít zník, Markéta Janatová, Aneta Buchtelová, Kate ina Pilátová Tomáš Funda Karel Hána (Gar.)</i>	Z,ZK	3	1P+1C	Z	z
F7PBKLAD	<b>Linear Algebra and Differential Calculus</b> <i>Ji í Neustupa, Jana Urzová Jana Urzová Eva Feuerstein (Gar.)</i>	Z,ZK	6	2P+4C	Z	z
F7PBKLG	<b>Logic</b> <i>Dagmar Brechlerová Dagmar Brechlerová Dagmar Brechlerová (Gar.)</i>	Z,ZK	5	2P+2C	Z	z
F7PBKMAZ	<b>Management and Administration in Health Care</b> <i>Ji í erný Ji í erný Ji í erný (Gar.)</i>	KZ	1	1P	Z	z
F7PBKPND	<b>Presentation Tools and Skills</b> <i>Christiane Malá, Tomáš Kraj a Christiane Malá Christiane Malá (Gar.)</i>	KZ	2	1P+1C	Z	z
F7PBKPR1	<b>Project I.</b> <i>Pavel Smr ka, Karel Hána, Christiane Malá, Tomáš Kraj a, Filip Hrdli ka, Jaroslav Pr cha, Ján Hýbl, Sára Barboríková, Jan Kašpar Karel Hána Karel Hána (Gar.)</i>	KZ	5	1S	Z	z

Number of semester: 2

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
F7PBKAJ2	<b>English II.</b> <i>Eva Maxová</i>	KZ	2	2S	L	z
F7PBKDDS	<b>Data and Data Structures</b> <i>Radim Krupi ka, Jan Kauler Radim Krupi ka Radim Krupi ka (Gar.)</i>	Z,ZK	5	2P+2C	L	z
F7PBKITP	<b>Integral Calculus</b> <i>Jana Urzová, Petr Maršálek Petr Maršálek Petr Maršálek (Gar.)</i>	Z,ZK	6	2P+4C	L	z
F7PBKML	<b>Matlab</b> <i>Michal Reimer</i>	KZ	3	2C	L	z
F7PBKOS	<b>Operating Systems</b> <i>Jan Mužík, David Gillar, Dominik Fiala Jan Mužík Jan Mužík (Gar.)</i>	Z,ZK	4	1P+2C	L	z
F7PBKPPP	<b>Programming Tools</b> <i>Pavel Smr ka, Radim Kliment, Michaela Gaea olakovová Pavel Smr ka Pavel Smr ka (Gar.)</i>	KZ	2	2C	L	z

F7PBKPR2	<b>Project II.</b> Pavel Smr ka, Karel Hána, Dagmar Brechlerová, Christiane Malá, Jan Kauler, Jan Mužík, Radim Kliment <b>Karel Hána</b> Karel Hána (Gar.)	KZ	5	1S	L	Z
F7PBKTVR	<b>Telemedicine and Virtual Reality</b> Pavel Smr ka, Karel Hána, Markéta Janatová, Radim Kliment, Ji í Brada, Vít Janovský <b>Karel Hána</b> Karel Hána (Gar.)	KZ	3	2C	L	Z

Number of semester: 3

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
F7PBKAJ3	<b>English III.</b> Eva Maxová <b>Eva Maxová</b> Eva Maxová (Gar.)	KZ	2	2S	Z	Z
F7PBKDS	<b>Database Systems</b> Michal Reimer <b>Michal Reimer</b>	Z,ZK	4	2P+2C	Z	Z
F7PBKISZ	<b>Information Systems in Health Care</b> Dagmar Brechlerová, Tomáš Kraj a, David Jirsa, Zoltán Szabó, Anna Hor áková, Petr Šmíd <b>Anna Hor áková</b> Zoltán Szabó (Gar.)	Z,ZK	4	2P+2C	Z	Z
F7PBKOOOP	<b>Object Oriented Programming</b> Tomáš Kraj a, Radim Krupi ka <b>Radim Krupi ka</b> Radim Krupi ka (Gar.)	Z,ZK	3	1P+2C	Z	Z
F7PBKPMMS-I	<b>Probability and Mathematical Statistics</b> Marek Piorecký <b>Filip erný</b> Marek Piorecký (Gar.)	Z,ZK	5	2P+2C	Z	Z
F7PBKPBII-I	<b>IT Law and Security</b> Dagmar Brechlerová <b>Dagmar Brechlerová</b> Dagmar Brechlerová (Gar.)	Z,ZK	3	1P+1C	Z	Z
F7PBKPR3	<b>Project II.</b> Pavel Smr ka, Karel Hána, Dagmar Brechlerová, Tomáš Kraj a, Michal Reimer <b>Karel Hána</b> Karel Hána (Gar.)	KZ	5	1S	Z	Z
F7PBKZTM1	<b>Fundamentals of Theoretical Medicine I.</b> Martina Dingová Šliková <b>Martina Dingová Šliková</b> Martina Dingová Šliková (Gar.)	Z,ZK	2	2P	Z	Z
F7PBKZIZI-I	<b>Medical Information Resources</b> Christiane Malá, Anna Hor áková <b>Anna Hor áková</b> Anna Hor áková (Gar.)	KZ	2	1P+1C	Z	Z

Number of semester: 4

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
F7PBKAJ4	<b>English IV.</b> Eva Maxová <b>Eva Moty ková</b> Eva Moty ková (Gar.)	KZ	2	2S	L	Z
F7PBKAZII-I	<b>Applied Informatics in Health Care</b> Christiane Malá	Z,ZK	2	1P+1C	L	Z
F7PBKMSI-I	<b>Modeling and Stimulation</b> Jan Kauler	Z,ZK	5	2P+2C	L	Z
F7PBKPSI-I	<b>Computer Network</b> Radim Krupi ka, Michal Reimer <b>Radim Krupi ka</b> Radim Krupi ka (Gar.)	Z,ZK	4	2P+2C	L	Z
F7PBKPPTI-I	<b>Advanced Programming Techniques</b> Radim Krupi ka <b>Radim Krupi ka</b> Radim Krupi ka (Gar.)	KZ	3	2C	L	Z
F7PBKPR4	<b>Project IV.</b> Karel Hána, Dagmar Brechlerová, Christiane Malá, Michal Reimer, Jan Mužík, Martin Bejtíc, Jan Broulím, Patrik Pluhovský, Pavla Suchánková <b>Karel Hána</b> Karel Hána (Gar.)	KZ	5	1S	L	Z
F7PBKTWA	<b>Web Application Development</b> David Jirsa <b>David Jirsa</b>	Z,ZK	3	1P+2C	L	Z
F7PBKZSI	<b>Software Engineering Fundamentals</b> Jan Mužík, David Gillar, Dominik Fiala <b>Jan Mužík</b> Jan Mužík (Gar.)	Z,ZK	4	2P+2C	L	Z
F7PBKZTM2	<b>Fundamentals of Theoretical Medicine II.</b> Ta ána Jarošíková, Jozef Rosina <b>Ta ána Jarošíková</b> Ta ána Jarošíková (Gar.)	ZK	2	2P	L	Z

Number of semester: 5

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
F7PBKBPD	<b>Data Transmission and Processing Security</b> Dagmar Brechlerová, Martin Stan k <b>Martin Stan k</b> Dagmar Brechlerová (Gar.)	Z,ZK	4	2P+2C	Z	Z
F7PBKBI-I	<b>Bioinformatics</b> Ond ej Klempí , Pavla Suchánková <b>Pavla Suchánková</b> Ond ej Klempí (Gar.)	Z,ZK	5	2P+2C	Z	Z

F7PBKPPN	<b>Health Legislation and Standards</b> <i>Vojt ch Kamenský, Ond ej Gajdoš, Peter Kneppo Vojt ch Kamenský Peter Kneppo (Gar.)</i>	KZ	2	1P+1C	Z	z
F7PBKPR5	<b>Project V.</b> <i>Karel Hána, Dagmar Brechlerová, Christiane Malá, Michal Reimer, Jan Mužík, Martin Bejtíc, Jan Broulím, Patrik Pluhovský, Pavla Suchánková Karel Hána Karel Hána (Gar.)</i>	KZ	6	1S	Z	z
F7PBKSF1	<b>Software Engineering</b> <i>Jan Mužík, Dominik Fiala, Pavel Trnka Jan Mužík Jan Mužík (Gar.)</i>	Z,ZK	4	2P+2C	Z	z
F7PBKUJE	<b>Artificial Intelligence and Expert Systems</b> <i>Radim Krupi ka Radim Krupi ka Radim Krupi ka (Gar.)</i>	Z,ZK	5	2P+2C	Z	z
F7PBKZOD-I	<b>Image Processing</b> <i>Zoltán Szabó, Jan Tesa Zoltán Szabó Zoltán Szabó (Gar.)</i>	Z,ZK	4	2P+2C	Z	z

Number of semester: 6

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
F7PBKATR	<b>Assistive Technology and Robotics in Medicine</b> <i>Jan Kauler Jan Kauler Jan Kauler (Gar.)</i>	Z,ZK	5	2P+2C	L	z
F7PBKBP	<b>Bachelor Thesis</b> <i>Pavel Smr ka, Tomáš Veselý, Karel Hána, Christiane Malá, Jan Kašpar, Radim Krupi ka, Michal Reimer, Aleš Tichopád Karel Hána Karel Hána (Gar.)</i>	Z	12	2S	L	z
F7PBKBS-I	<b>Biological Signals</b> <i>Christiane Malá, Marek Piorecký, Václava Piorecká Václava Piorecká Václava Piorecká (Gar.)</i>	Z,ZK	5	2P+2C	L	z
F7PBKNVM-I	<b>Design and Development of Mobile Applications</b> <i>Jan Mužík, Radim Kliment Radim Kliment Jan Mužík (Gar.)</i>	Z,ZK	5	2P+2C	L	z
F7PBKSBP	<b>Bachelor Thesis Seminar</b> <i>Karel Hána, Christiane Malá, Radim Krupi ka Radim Krupi ka Radim Krupi ka (Gar.)</i>	Z	3	2S	L	z

List of groups of courses of this pass with the complete content of members of individual groups

### List of courses of this pass:

Code	Name of the course	Completion	Credits
17BOZP	Occupational Safety and Health, Fire Protection and First Aid	Z	0
F7PBKAJ1	English I.	KZ	2
F7PBKAJ2	English II.	KZ	2
F7PBKAJ3	English III.	KZ	2
F7PBKAJ4	English IV.	KZ	2
F7PBKALP	Algorithmization and Programming	Z,ZK	6
F7PBKATR	Assistive Technology and Robotics in Medicine	Z,ZK	5
F7PBKAZI-I	Applied Informatics in Health Care	Z,ZK	2
F7PBKBI-I	Bioinformatics	Z,ZK	5
F7PBKBP	Bachelor Thesis	Z	12
F7PBKBDP	Data Transmission and Processing Security	Z,ZK	4
F7PBKBS-I	Biological Signals	Z,ZK	5
F7PBKDDS	Data and Data Structures	Z,ZK	5
F7PBKDS	Database Systems	Z,ZK	4
F7PBKISZ	Information Systems in Health Care	Z,ZK	4
F7PBKITP	Integral Calculus	Z,ZK	6
F7PBKKT	Communication Technology	Z,ZK	3

Význam a praktické příklady nasazení informačních a komunikačních technologií ve zdravotnictví. Historie, základní struktura a rozdělení počítačové architektury, motherboard, sběrnice, BIOS, autotest, procesor, operační paměť, klasické a SSD pevné disky, paměťové karty, zvukové karty, grafické karty, monitory, klávesnice, myši, tiskárny a skenery, univerzální vstupní a výstupní porty (USB, USB-C, HDMI, DisplayPort, Thunderbolt, HDMI, S/PDIF), RS232 jako virtuální COM port a jeho použití v praxi, modemy, nejčastější sběrnice pro propojování periférií v mikroprocesorových systémech (IIC, SPI), nejčastější sběrnice pro komunikaci počítačů a systémů ve zdravotnictví, standardizace, operační systémy, mobilní platforma pro snímání, vyhodnocování a přenos dat, rozhraní Bluetooth, NFC, počítačové sítě, LAN, WAN, vrstvý referenční model OSI, základní technické prostředky LAN (Ethernet, WiFi a jejich

praktická realizace), Internet - prohlížeč, používané standardy a jazyky, úvod do architektury TCP/IP, protokoly a adresování, propojování lokálních sítí, brány a směrovače, pojem „server“, architektura klient-server, nejčastěji používané protokoly síťové architektury TCP/IP: HTTP, FTP, DNS, DHCP, VPN.			
F7PBKLAD	Linear Algebra and Differential Calculus	Z,ZK	6
F7PBKLG	Logic	Z,ZK	5
F7PBKMAZ	Management and Administration in Health Care	KZ	1
F7PBKML	Matlab	KZ	3
F7PBKMS-I	Modeling and Stimulation	Z,ZK	5
F7PBKNVM-I	Design and Development of Mobile Applications	Z,ZK	5
F7PBKOOOP	Object Oriented Programming	Z,ZK	3
F7PBKOS	Operating Systems	Z,ZK	4
F7PBKPBI-I	IT Law and Security	Z,ZK	3
F7PBKPMS-I	Probability and Mathematical Statistics	Z,ZK	5
F7PBKPND	Presentation Tools and Skills	KZ	2
F7PBKPPN	Health Legislation and Standards	KZ	2
F7PBKPPP	Programming Tools	KZ	2
F7PBKPPT-I	Advanced Programming Techniques	KZ	3
F7PBKPR1	Project I.	KZ	5
F7PBKPR2	Project II.	KZ	5
F7PBKPR3	Project II.	KZ	5
F7PBKPR4	Project IV.	KZ	5
F7PBKPR5	Project V.	KZ	6
F7PBKPS-I	Computer Network	Z,ZK	4
F7PBKSBP	Bachelor Thesis Seminar	Z	3
F7PBKSFI	Software Engineering	Z,ZK	4
F7PBKTVR	Telemedicine and Virtual Reality	KZ	3
F7PBKTWA	Web Application Development	Z,ZK	3
F7PBKUIE	Artificial Intelligence and Expert Systems	Z,ZK	5
F7PBKZIZ-I	Medical Information Resources	KZ	2
F7PBKZOD-I	Image Processing	Z,ZK	4
F7PBKZSI	Software Engineering Fundamentals	Z,ZK	4
F7PBKZTM1	Fundamentals of Theoretical Medicine I.	Z,ZK	2
F7PBKZTM2	Fundamentals of Theoretical Medicine II.	ZK	2

For updated information see <http://bilakniha.cvut.cz/en/FF.html>

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