

# Recommended pass through the study plan

## Name of the pass: Information and Communication Technologies 23/24, 24/25

Faculty/Institute/Others:

Department:

Pass through the study plan: Information and Communication Technologies

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 předepsaném minimálním počtu PV předmětů 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<br>(in case of groups of courses the list of codes of their members)<br><i>Tutors, authors and guarantors (gar.)</i>                           | Completion | Credits | Scope | Semester | Role |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|-------|----------|------|
| F7PBKALP | <b>Algorithmization and Programming</b><br><i>Pavel Smrčka, Tomáš Funda, Tomáš Veselý, Lenka Hanáková <b>Tomáš Funda</b> Pavel Smrčka (Gar.)</i>                                                 | Z,ZK       | 6       | 2P+2C | Z        | z    |
| F7PBKAJ1 | <b>English I.</b><br><i>Eva Maxová, Eva Motyčková <b>Eva Motyčková</b> Eva Motyčková (Gar.)</i>                                                                                                  | KZ         | 2       | 2S    | Z        | z    |
| 17BOZP   | <b>Occupational Safety and Health, Fire Protection and First Aid</b><br><i>Petr Kudrna <b>Petr Kudrna</b> Petr Kudrna (Gar.)</i>                                                                 | Z          | 0       | 1P    | Z        | z    |
| F7PBKKT  | <b>Communication Technology</b><br><i>Tomáš Funda, Tomáš Veselý, Karel Hána, Martin Vítězník, Markéta Janatová, Aneta Buchtelová, Kateřina Pilátová <b>Tomáš Funda</b> Karel Hána (Gar.)</i>     | Z,ZK       | 3       | 1P+1C | Z        | z    |
| F7PBKLAD | <b>Linear Algebra and Differential Calculus</b><br><i>Jiří Neustupa, Jana Urzová <b>Jana Urzová</b> Eva Feuerstein (Gar.)</i>                                                                    | Z,ZK       | 6       | 2P+4C | Z        | z    |
| F7PBKLG  | <b>Logic</b><br><i>Dagmar Brechlerová <b>Dagmar Brechlerová</b> Dagmar Brechlerová (Gar.)</i>                                                                                                    | Z,ZK       | 5       | 2P+2C | Z        | z    |
| F7PBKMAZ | <b>Management and Administration in Health Care</b><br><i>Jiří Černý <b>Jiří Černý</b> Jiří Černý (Gar.)</i>                                                                                     | KZ         | 1       | 1P    | Z        | z    |
| F7PBKPND | <b>Presentation Tools and Skills</b><br><i>Christiane Malá, Tomáš Krajča <b>Christiane Malá</b> Christiane Malá (Gar.)</i>                                                                       | KZ         | 2       | 1P+1C | Z        | z    |
| F7PBKPR1 | <b>Project I.</b><br><i>Pavel Smrčka, Karel Hána, Christiane Malá, Tomáš Krajča, Filip Hrdlička, Jaroslav Průcha, Ján Hýbl, Sára Barboríková, Jan Kašpar <b>Karel Hána</b> Karel Hána (Gar.)</i> | KZ         | 5       | 1S    | Z        | z    |

Number of semester: 2

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

|          |                                                                                                                                                                           |    |   |    |   |   |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|----|---|---|
| F7PBKPR2 | <b>Project II.</b><br><i>Pavel Smrčka, Karel Hána, Dagmar Brechlerová, Christiane Malá, Jan Kauler, Jan Mužík, Radim Kliment</i> <b>Karel Hána</b> Karel Hána (Gar.)      | KZ | 5 | 1S | L | z |
| F7PBKTVR | <b>Telemedicine and Virtual Reality</b><br><i>Pavel Smrčka, Karel Hána, Markéta Janatová, Radim Kliment, Jiří Brada, Vít Janovský</i> <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<br>(in case of groups of courses the list of codes of their members)<br><i>Tutors, authors and guarantors (gar.)</i>               | Completion | Credits | Scope | Semester | Role |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|-------|----------|------|
| F7PBKAJ3    | <b>English III.</b><br><i>Eva Maxová</i> <b>Eva Maxová</b> Eva Maxová (Gar.)                                                                                                         | KZ         | 2       | 2S    | Z        | z    |
| F7PBKDS     | <b>Database Systems</b><br><i>Michal Reimer</i> <b>Michal Reimer</b>                                                                                                                 | Z,ZK       | 4       | 2P+2C | Z        | z    |
| F7PBKISZ    | <b>Information Systems in Health Care</b><br><i>Dagmar Brechlerová, Tomáš Krajča, David Jirsa, Zoltán Szabó, Anna Horňáková, Petr Smíd</i> <b>Anna Horňáková</b> Zoltán Szabó (Gar.) | Z,ZK       | 4       | 2P+2C | Z        | z    |
| F7PBKOOOP   | <b>Object Oriented Programming</b><br><i>Tomáš Krajča, Radim Krupička</i> <b>Radim Krupička</b> Radim Krupička (Gar.)                                                                | Z,ZK       | 3       | 1P+2C | Z        | z    |
| F7PBKPR3    | <b>Project II.</b><br><i>Pavel Smrčka, Karel Hána, Dagmar Brechlerová, Tomáš Krajča, Michal Reimer</i> <b>Karel Hána</b> Karel Hána (Gar.)                                           | KZ         | 5       | 1S    | Z        | z    |
| F7PBKUSS    | <b>Introduction to Systems and Signals</b><br><i>Ondřej Klempíř</i> Ondřej Klempíř (Gar.)                                                                                            | Z,ZK       | 5       | 2P+2C | Z        | z    |
| F7PBKZATA-C | <b>Analogue Techniques Fundamentals</b><br><i>Ondřej Klempíř</i> Ondřej Klempíř (Gar.)                                                                                               | Z,ZK       | 3       | 2P+2C | Z        | z    |
| F7PBKZKB1-C | <b>Fundamentals of Cyber Security I.</b>                                                                                                                                             | ZK         | 2       | 1P+1S | Z        | z    |
| F7PBKZTMS   | <b>Fundamentals of Theoretical Medicine - Somatology</b><br><i>Ondřej Klempíř</i> Ondřej Klempíř (Gar.)                                                                              | Z,ZK       | 2       | 2P    | Z        | z    |

Number of semester: 4

| Code        | Name of the course / Name of the group of courses<br>(in case of groups of courses the list of codes of their members)<br><i>Tutors, authors and guarantors (gar.)</i>                                     | Completion | Credits | Scope | Semester | Role |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|-------|----------|------|
| F7PBKAZC-C  | <b>Biosignal Algorithms in C Language</b><br><i>Pavel Smrčka</i> <b>Pavel Smrčka</b> Pavel Smrčka (Gar.)                                                                                                   | Z,ZK       | 5       | 2P+2C | L        | z    |
| F7PBKAJ4    | <b>English IV.</b><br><i>Eva Maxová</i> <b>Eva Motyčková</b> Eva Motyčková (Gar.)                                                                                                                          | KZ         | 2       | 2S    | L        | z    |
| F7PBKPTD-C  | <b>Advanced Technologies in Diabetology</b><br><i>Jan Mužík</i> <b>Jan Mužík</b> Jan Mužík (Gar.)                                                                                                          | KZ         | 3       | 2P    | L        | z    |
| F7PBKPR4    | <b>Project IV.</b><br><i>Karel Hána, Dagmar Brechlerová, Christiane Malá, Michal Reimer, Jan Mužík, Martin Bejtík, Jan Broulím, Patrik Pluhovský, Pavla Suchánková</i> <b>Karel Hána</b> Karel Hána (Gar.) | KZ         | 5       | 1S    | L        | z    |
| F7PBKTWA    | <b>Web Application Development</b><br><i>David Jirsa</i> <b>David Jirsa</b>                                                                                                                                | Z,ZK       | 3       | 1P+2C | L        | z    |
| F7PBKZCT-C  | <b>Digital Technology Fundamentals</b><br><i>Pavel Smrčka, Tomáš Veselý, Karel Hána, Martin Vitězník</i> <b>Karel Hána</b> Karel Hána (Gar.)                                                               | Z,ZK       | 6       | 2P+2C | L        | z    |
| F7PBKZKB2-C | <b>Fundamentals of Cyber Security II.</b>                                                                                                                                                                  | ZK         | 2       | 1P+1S | L        | z    |
| F7PBKZSI    | <b>Software Engineering Fundamentals</b><br><i>Jan Mužík, David Gillar, Dominik Fiala</i> <b>Jan Mužík</b> Jan Mužík (Gar.)                                                                                | Z,ZK       | 4       | 2P+2C | L        | z    |

Number of semester: 5

| Code        | Name of the course / Name of the group of courses<br>(in case of groups of courses the list of codes of their members)<br><i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|-------|----------|------|
| F7PBKBPD    | <b>Data Transmission and Processing Security</b><br><i>Dagmar Brechlerová, Martin Staněk</i> <b>Martin Staněk</b> Dagmar Brechlerová (Gar.)                            | Z,ZK       | 4       | 2P+2C | Z        | z    |
| F7PBKMTB-C  | <b>Microprocessor Technology in Biomedicine</b><br><i>Pavel Smrčka</i>                                                                                                 | KZ         | 5       | 1P+3C | Z        | z    |
| F7PBKNVMA-C | <b>Design and Development of Mobile and Embedded Applications</b><br><i>Ondřej Klempíř</i> Ondřej Klempíř (Gar.)                                                       | KZ         | 5       | 1P+2C | Z        | z    |

|           |                                                                                                                                                                                                    |      |   |       |   |   |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|-------|---|---|
| F7PBKPPN  | <b>Health Legislation and Standards</b><br><i>Vojtěch Kamenský, Ondřej Gajdoš, Peter Kneppo Vojtěch Kamenský Peter Kneppo (Gar.)</i>                                                               | KZ   | 2 | 1P+1C | Z | z |
| F7PBKPR5  | <b>Project V.</b><br><i>Karel Hána, Dagmar Brechlerová, Christiane Malá, Michal Reimer, Jan Mužík, Martin Bejtík, Jan Broulím, Patrik Pluhovský, Pavla Suchánková Karel Hána Karel Hána (Gar.)</i> | KZ   | 6 | 1S    | Z | z |
| F7PBKSFI  | <b>Software Engineering</b><br><i>Jan Mužík, Dominik Fiala, Pavel Trnka Jan Mužík Jan Mužík (Gar.)</i>                                                                                             | Z,ZK | 4 | 2P+2C | Z | z |
| F7PBKUIEA | <b>Artificial Intelligence and Expert Systems</b><br><i>Ondřej Klempíř Ondřej Klempíř (Gar.)</i>                                                                                                   | Z,ZK | 4 | 2P+2C | Z | z |

Number of semester: 6

| Code       | Name of the course / Name of the group of courses<br>(in case of groups of courses the list of codes of their members)<br><i>Tutors, authors and guarantors (gar.)</i>                                   | Completion | Credits | Scope | Semester | Role |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|-------|----------|------|
| F7PBKATR   | <b>Assistive Technology and Robotics in Medicine</b><br><i>Jan Kauler Jan Kauler Jan Kauler (Gar.)</i>                                                                                                   | Z,ZK       | 5       | 2P+2C | L        | z    |
| F7PBKBP    | <b>Bachelor Thesis</b><br><i>Karel Hána, Dagmar Brechlerová, Christiane Malá, Radim Krupička, Michal Reimer, Jan Mužík, Jan Broulím, Patrik Pluhovský, Pavla Suchánková Karel Hána Karel Hána (Gar.)</i> | Z          | 12      | 2S    | L        | z    |
| F7PBKEHT-C | <b>E-Health and Telemedicine</b>                                                                                                                                                                         | Z,ZK       | 7       | 2P+4C | L        | z    |
| F7PBKPPN-C | <b>Computer-aided design, development and production of electronic devices</b><br><i>Martin Vítězník</i>                                                                                                 | KZ         | 3       | 2C    | L        | z    |
| F7PBKSBP   | <b>Bachelor Thesis Seminar</b><br><i>Karel Hána, Christiane Malá, Radim Krupička Radim Krupička Radim Krupička (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       |
| F7PBKAZC-C | Biosignal Algorithms in C Language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Z,ZK       | 5       |
| F7PBKBP    | Bachelor Thesis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Z          | 12      |
| F7PBKBPD   | Data Transmission and Processing Security                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Z,ZK       | 4       |
| F7PBKDDS   | Data and Data Structures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Z,ZK       | 5       |
| F7PBKDS    | Database Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Z,ZK       | 4       |
| F7PBKEHT-C | E-Health and Telemedicine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Z,ZK       | 7       |
| F7PBKISZ   | Information Systems in Health Care                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Z,ZK       | 4       |
| F7PBKITP   | Integral Calculus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Z,ZK       | 6       |
| F7PBKKT    | Communication Technology<br>Význam a praktické příklady nasazení informačních a komunikačních technologií ve zdravotnictví. Historie, základní struktura a rozdělení počítačů, 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 vstupně 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 připojování periférií v mikroprocesorových systémech (IIC, SPI), nejčastější sběrnice pro komunikaci přístrojů 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 - prohlížeče, 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. | Z,ZK       | 3       |
| 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 |
| F7PBKMTB-C  | Microprocessor Technology in Biomedicine                                | KZ   | 5 |
| F7PBKNVMA-C | Design and Development of Mobile and Embedded Applications              | KZ   | 5 |
| F7PBKOOOP   | Object Oriented Programming                                             | Z,ZK | 3 |
| F7PBKOS     | Operating Systems                                                       | Z,ZK | 4 |
| F7PBKPNPND  | Presentation Tools and Skills                                           | KZ   | 2 |
| F7PBKPPN    | Health Legislation and Standards                                        | KZ   | 2 |
| F7PBKPPN-C  | Computer-aided design, development and production of electronic devices | KZ   | 3 |
| F7PBKPPP    | Programming Tools                                                       | KZ   | 2 |
| 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 |
| F7PBKPTD-C  | Advanced Technologies in Diabetology                                    | KZ   | 3 |
| 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 |
| F7PBKUIEA   | Artificial Intelligence and Expert Systems                              | Z,ZK | 4 |
| F7PBKUSS    | Introduction to Systems and Signals                                     | Z,ZK | 5 |
| F7PBKZATA-C | Analogue Techniques Fundamentals                                        | Z,ZK | 3 |
| F7PBKZCT-C  | Digital Technology Fundamentals                                         | Z,ZK | 6 |
| F7PBKZKB1-C | Fundamentals of Cyber Security I.                                       | ZK   | 2 |
| F7PBKZKB2-C | Fundamentals of Cyber Security II.                                      | ZK   | 2 |
| F7PBKZSI    | Software Engineering Fundamentals                                       | Z,ZK | 4 |
| F7PBKZTMS   | Fundamentals of Theoretical Medicine - Somatology                       | Z,ZK | 2 |

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

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