Education and Examination Regulation 2020-2021

Bachelor Computing Science

Radboud Universiteit

TABLE OF CONTENTS[1]

[1] These Education and Examination Regulations are a translation of a Dutch-language document. The original Dutch OER takes precedence over all its translations and therefore, no rights can be derived from this translation.

PART I GENERAL PROVISIONS:

Section 1. General provisions

Article 1.1 Applicability of these regulations

1. These Education and Examination Regulations (EER) apply to the Bachelor's programmes (the degree programme in which the student is enrolled is hereinafter referred to as "the programme"), including all their components, of the Faculty of Science. These EER outline the applicable procedures, rights, and obligations concerning teaching, interim examinations, and final examinations.
2. The present regulations apply to all students enrolled in the programme in the 2020-2021 academic year. Students who started the degree programme before 1 September 2016 and have been continuously enrolled in this programme may appeal to the EER which was active at the time of their initial enrolment in the programme.
3. Course components provided by a different faculty or institution are subject to the rules applicable at that faculty or institution. Components offered by the Faculty of Science are at all times subject to the regulations described in at least one of the EERs of the Faculty of Science.
4. The faculty offers the following Bachelor's programmes:
   a. Biology;
   b. Chemistry;
   c. Computing Science;
   d. Molecular Life Sciences;
   e. Natuur- en Sterrenkunde;
   f. Science;
   g. Mathematics.
5. The degree programmes have a study load of 180 EC.
6. All degree programmes are offered exclusively as full-time programmes.
7. The programmes Biology, Chemistry, Computing Science, and Molecular Life Sciences are taught in English. The other programmes have English components. An overview of this is provided in Article 7.2.

Article 1.2 Definition of terms

1. The terms used in these EER, which are also used in the Higher Education and Research Act (Wet op het hoger onderwijs en wetenschappelijk onderzoek, hereinafter, "the Act") will have the same meaning as in the Act.
2. Apart from the terms referred to in paragraph 1, the terms below will be understood to have the following meaning:

a. Degree programme: the Bachelor's programme referred to in Article 7.3a paragraph 1 of the Act;
b. Component: an educational unit as referred to in Article 7.3 paragraphs 2 and 3 of the Act;
c. Student: anyone enrolled at Radboud University for participation in a degree programme or in the partial examinations or final examinations of a programme;
d. Academic year: the period from 1 September in a given year until 31 August of the following year;
e. Practical: a practical exercise as referred to in Article 7.13 paragraph 2 under D of the Act;
f. Interim examination: an examination testing the knowledge, understanding or skills of the student in relation to a certain unit of study, as well as the assessment of the results of this examination, which is administered by at least one examiner designated by the Examination Board;
g. Partial examination: an examination of the knowledge, insight, and skills of the student, as well as the assessment of the results of the examination, which in conjunction with one or more other partial examinations constitute the interim examination as referred to under paragraph f. In these regulations, when the term examination is used this can also be read as partial examination, unless explicitly indicated otherwise;
h. Resit: a new opportunity to take a particular examination as referred to in Article 7.10 paragraph 1 of the Higher Education and Research Act (WHW). In these regulations, when the term examination is used this can also be read as resit, unless explicitly indicated otherwise;
i. Final examination: an assessment, on the basis of which the Examination Board determines whether all the components pertaining to the Bachelor's programme have been completed successfully. The Examination Board may decide that the final examination also includes an investigation by the Examination Board into the knowledge, insight, and skills of the candidate, as well as the assessment of the outcomes of that investigation (in accordance with Article 7.10 WHW);
j. *Fraud*: any behaviour or negligence on the part of the student that, by nature, is directed towards making it partly or entirely impossible to properly assess the knowledge, insights, and skills of the student or of another student. The Regulations on Fraud during Interim Examinations and Examinations are included as an appendix to these EER;
k. Examination Board: the examination board of a degree programme, established in accordance with Article 7.12 of the Act. Also see the Radboud University Structural Regulations;
l. Examiner: the person designated by the Examination Board to administer the interim examinations, in accordance with Article 7.12 of the Act;
m. EC: European Credits, i.e. the study load unit in accordance with the European Credit Transfer System;
n. Work day: Mondays to Fridays, with the exception of official holidays and any other days designated by Radboud University as collective holidays;

o. Awarding of the degree certificate: the formal confirmation that all the examination requirements have been met;
p. Prospectus: the guide for a particular degree programme of the Faculty of Science, containing specific information for the Bachelor's programme;
q. The university: Radboud University;
r. The faculty: The Faculty of Science;
s. The education institute: the organisational unit responsible for the degree programme;
t. Minor: a cohesive selection of components;
u. Free elective: a freely-selected, academic, assessable component;
v. Dual Bachelor's programme: excellence programme in which the student takes two Faculty of Science Bachelor's programmes simultaneously;
w. Rules and regulations: the rules in which the Examination Board explain how it works in accordance with the Education and Examination Regulations.

PART II GENERAL PART

Section 2. Admission to the degree programme and education

Article 2.1 Admission and admission requirements

1. To be admitted to the programme, the student must meet the statutory (additional) prior education requirements set out by the Act.
2. Decisions regarding admission are made by the education institute on behalf of the dean.
3. The programme-specific part of these EER lists the admission requirements the student must meet to be admitted to the degree programme.

Article 2.2 Substitute requirements for insufficient prior education

The student who has a pre-university education diploma that does not meet the prior education requirements referred to in Article 2.1, may still enrol, with due observance of the provisions of Article 7.25 paragraph 5 of the Act, on the condition that comparable requirements have been met in terms of content, subject to further assessment. The assessment procedure and the requirements are outlined in the programme-specific part of these regulations.

Article 2.3 Language requirements

1. A sufficient command of Dutch is required to participate in the programme and to sit for examinations in Dutch. Non-Dutch students have met the language requirement for sufficient proficiency in Dutch if they have passed the state examination of Dutch as a second language, level 2.

1. In certain cases, the education institute may assess whether a student is sufficiently proficient in Dutch.
2. A sufficient command of the English language is required to participate in the programme and to sit for examinations in English. This requirement is met if the student:
   a. comes from one of the following countries: Australia, Canada (with the exception of Quebec), Ireland, New Zealand, Singapore, the United Kingdom, the United States, and South Africa; or
   b. is in possession of a pre-university education (VWO) diploma; or
   c. is in possession of a pre-university education diploma obtained at an English-language institution in the Netherlands or elsewhere; or
   d. has a pre-university education diploma obtained at a German secondary education institution, with English as *Grundkurs*; or
   e. has a Bachelor's diploma from a university of applied sciences (HBO); or
   f. has a Bachelor's diploma from a Dutch university; or
   g. in the opinion of the programme meets the requirements; or
   h. has achieved a sufficient score on one of the following English language tests:
      i. the TOEFL with a score of 575 or higher for the paper version;

ii. the TOEFL with a score of 90 or higher for the Internet version with none of the sub-scores below 20;
iii. the IELTS with a score of 6.5 or higher, where none of the sub-scores are below 6.0;
iv. the Cambridge CAE or CPE with a score of C or higher.
v.

Section 3. Structure and design

Article 3.1 Final examination, degree, and distinctions

1. All Bachelor's programmes conclude with a Bachelor's examination.
2. The student who has passed the examination of the Bachelor's degree programme will be awarded a Bachelor of Science (MSc) degree.
3. The degree referred to in the second paragraph is exclusively awarded if the student has earned at least half of the EC for their degree programme at this university.
4. The Examination Board can award a distinction to a student who has successfully passed the degree programme examination. The rules for awarding a distinction can be found in Article 4.7 of these EER.

Article 3.2 General learning outcomes

1. The degree programme has the following learning outcomes for students:
   a. Acquire knowledge, skills and insights in the relevant field of study;
   b. Develop academic competences;
   c. Prepare for further study or future career.
2. Students who have completed one of the faculty Bachelor's programmes as referred to in Article 7.10a paragraph 1 of the Act, shall be granted unconditional admission to at least one of the Master's programmes at the university.

Article 3.3 Curriculum

1. The degree programme-specific part of these regulations describes all the components that make up the degree programme.
2. The Bachelor's programmes include a component with a study load of 3 EC for the purpose of reflecting on study performance and planning, as well as boosting the development of academic skills.
3. The degree programme includes a free elective component with a minimum study load of 6 EC. The elective courses cannot have a substantial overlap in content with courses from the mandatory component. Courses that overlap with the elective courses within the mandatory programme or in the minor component are also not allowed.
4. Every programme has a minor component of at least 15 EC in which the student can participate in one or more minors.

5. If a minor is not accessible to students of a specific Bachelor's programme, this is mentioned in the programme-specific part of these EER.
6. Minors offered by Radboud University can be found in the prospectus. The approval of the Examination Board must be requested if a student wants to do a minor which is not offered by Radboud University. This minor will be labelled as a "free minor" and needs to meet the following requirements:
   a. The minor encompasses at least 15 EC and at most 30 EC;
   b. The minor is thematically cohesive;
   c. There should be no substantial overlap with other parts of the Bachelor's degree programme.
7. The degree programme also includes one or more components of a philosophical nature, in total amounting to at least 3 EC, as well as a writing skills component of 3 EC.
8. Finally, the degree programme includes an individual final aptitude test (hereinafter: Bachelor's thesis) with a study load of 12 EC.
9. In addition to the provisions of paragraph 8, the Bachelor's thesis can be expanded. In all cases in which an expansion is possible, this will be stated in the programme-specific part of these EER.
10. The composition of the Bachelor's programme compiled by the student must be presented for approval to the Examination Board no later than three months before the expected examination date. The Examination Board will decide whether to grant approval within a month of receiving the submitted programme.

11. A student is permitted to add components to the examination programme. These components are considered extracurricular and do not count towards the determination of the distinction.
12. If a student can choose between components within the curriculum and the student has passed more than one of these components, then the student can decide which components will count towards their distinction.

Article 3.4 Sequence of education and interim examinations

1. The student may not start the final aptitude assessment (Bachelor's thesis) before a minimum of 120 EC of the degree programme have been obtained, which includes the components of the first year.
2. The programme-specific part of these EER may contain further criteria for the order in which components may be taken and the related interim examinations.

Article 3.5 Type of interim examination

1. Each component of the degree programme will be concluded by an interim examination. Interim examinations may comprise more than one modular partial examination and may consist of the following assessment forms:
   a. Written test (paper or digital);
   b. Oral test;
   c. Presentation;
   d. Skill test;
   e. The creation of a discipline-specific product and/or assignment.
2. Prior to the commencement of the academic year, information will be provided in the prospectus for each individual component regarding the way in which the interim examinations will be administered. At the request of the student or the examiner, the Examination Board may allow an interim examination to be administered in a form other than stated above, if this is not to the detriment of the student.
3. In cases where a component has admission requirements, the admission requirements will be published in the prospectus before the start of the academic year, see also Article 3.2 paragraph 2. This requires the permission of the programme coordinator. Contrary to the above provisions, the admission requirements for the courses completed in the fourth period may still be changed up until the start of the second period, with the permission of the programme coordinator.
4. There are no admission requirements for an interim examination; if a student is enrolled in a component, they are admitted to all sub-components including the interim examination.
5. Students with disabilities are given the opportunity to take interim examinations in a manner appropriately suited to their disability. The Examination Board, if necessary, shall seek expert advice and counsel prior to reaching its decision. If the students in question require certain facilities for their interim examinations, they must request these from the Education and Examination Administration of the faculty no later than two weeks before the interim examination.
6. During oral examinations, no more than one person is tested simultaneously, unless decided otherwise by the Examination Board.
7. An oral interim examination is not public, unless the Examination Board has deemed otherwise in exceptional cases. An audio recording is made of oral interim examinations. As an alternative to an audio recording, a second examiner or a designated observer may be present.

Article 3.6 Exemptions

1. At the request of the student and having heard the examiner involved, the Examination Board may exempt the student, either partially or fully, from sitting for an interim examination if the student:
   a. Has completed a course in a relevant subject at a university or institute of higher vocational education (HBO);
   b. Demonstrates that they have adequate knowledge and skills regarding the component in question as a result of relevant work experience or professional experience.

2. If the degree programme allows group exemptions, then these are included in the programme-specific part of these regulations.
3. Only one grade for each course may be registered for a single degree programme. If a course is also part of another examination programme, this course will be listed on the diploma as an exemption.
4. Students who were first enrolled after 1 September 2017 can never have more than 70 EC of exemptions, as stated in paragraph 1.
5. All results for a degree programme achieved before the date of the first enrolment are stated as exemptions on the degree programme's diploma. These exemptions do not count towards the 70 EC as stated in paragraph 4 if the courses are only included in one examination programme.
6. Exemptions as referred to in paragraph 1 cannot be granted for the Bachelor's thesis.
7. As an exception to the provision in paragraph 6, a student who does a dual Bachelor's can receive an exemption for a Bachelor's thesis if they completed a Bachelor's thesis for another programme within the Faculty of Science.

Article 3.7 Term of validity for successfully completed interim examinations

1. The term of validity of successfully completed interim examinations is unlimited.
2. Results obtained for interim examinations are valid at least until the end of the academic year. The lecturer can decide to extend the term of the validity for the result of interim examinations.

Article 3.8 Elective programme

The programme's Examination Board determines whether to grant permission for a student to take an elective programme as meant in Article 7.3d of the Act. The Examination Board will verify whether the programme fits within the domain of the degree programme under the authority of the Examination Board, whether it is sufficiently cohesive, and whether the level is adequate in the context of the programme's exit qualifications.

Section 4. Testing

Article 4.1 Frequency of interim examinations

1. Students are given the opportunity to take the examinations at least twice per academic year per interim examination.
2. Contrary to the provisions of paragraph 1, a degree programme coordinator may decide to only offer one opportunity for an interim examination or partial examination. If only one opportunity is given to take an interim examination or partial examination, this is stated in the programme prospectus before the start of the academic year.

3. Contrary to the provision in the first paragraph, there will be at least one opportunity in the following year to take an interim examination for a course that was taught for the final time in a particular academic year.
4. If a certain component is not given in a particular academic year, the opportunity to take the corresponding examination will be offered once in that academic year, as long as the interim examination is administered in written or oral form.

Article 4.2 Registration for course examinations

1. Students who register through OSIRIS for a component are also automatically registered for the first interim examination opportunity in the relevant academic year. This does not apply to students whose enrolment in the degree programme has not yet been completed.
2. Registration for an interim examination closes at 11:59 pm on the day preceding a period of five working days before the date of the interim examination, so that there are always five full working days between the deadline for registration for the interim examination in question and the date of that examination. The day on which the interim examination takes place is not included in this period of five working days.
3. A successfully passed examination may be taken again.
4. If a student resits an interim examination, the most recent result will determine the final result.

Article 4.3 Confirmation of examination results

1. The result of an interim examination is determined by an examiner in the form of a grade on a scale of 1 to 10 (with 10 as the highest possible grade), consisting exclusively of whole numbers or half numbers. However, a grade of 5.5 is never given. When rounding off between 5 and 6, the rule is that a grade lower than 5.5 is rounded down to a five (5) which is an insufficient grade, meaning the educational component has not been successfully completed; while a 5.5 and higher is rounded up to a six (6), meaning that the educational component has been successfully completed. In addition to results in the form of a grade, the assessments “completed”, “not completed”, “satisfactory”, “not satisfactory”, and “good” may also be awarded.
2. Contrary to the provisions of paragraph 1, partial examinations may also be graded with one decimal point on a 10-point scale. Rounding off grades is done exclusively for the final grade.

Article 4.4 Publication of results

1. The examiner shall determine the result of a Bachelor’s thesis within 15 working days after its submission via http://thesissubmission.science.ru.nl.
2. The examiner shall determine the result of an oral examination within two working days of the date that it was administered.

3. The examiner shall determine the result of a written interim examination within ten working days of the date it was administered for interim examinations in the first year of the degree programme, and within 15 working days for interim examinations in the other years of the degree programme. Here the precondition applies that there must be at least ten working days between the date of the publication of the result in Osiris and the date of the resit.
4. Contrary to the provisions in paragraph 3, the examiner shall determine the result of a written interim examination in the fourth period no later than nine days before the scheduled date of the corresponding resit. The examiner shall determine the result of a written resit examination in the fourth period within five working days of the date it was administered.
5. In special cases, the Examination Board may extend the term in which the result must be determined as referred to in paragraph 3 by a maximum of ten working days. This is not possible for the interim examinations in the second period of the first year and for the interim examinations in the fourth period.
6. In this statement of the result of an interim examination, the student is also informed of their right of inspection, referred to in Article 4.5 as well as the right to appeal to the Examination Appeals Board.
7. A student may submit an appeal of a decision by the Examination Board to the Examination Appeals Board within six weeks.

Article 4.5 Right of inspection and explanation

1. Within at least 30 working days following publication of a written interim examination result, the student may request access to review and inspect all graded work. For the results of interim examinations with “open” questions, at the student’s request they shall be granted a copy of their graded work at cost.
2. During the period referred to in paragraph 1 of this Article, any student who has taken an interim examination may review the questions and assignments of the interim examination in question, as well as the standards on which the result was based.
3. Inspection or explanation as referred to in paragraph 1 and 2 shall take place during at least one scheduled time before the start of the interim examination. If the student demonstrates that they are or were unable to attend an inspection at a determined place and time due to force majeure, they may request the Examination Board to allow them another opportunity to inspect the examination, if possible within the period referred to in the first paragraph. In all cases, inspection will take place no later than five working days prior to the resit of an interim examination. For examinations in the fourth period, the student may view their work until one working day before the resit.
4. The examiner shall retain all written interim examinations and related papers (assignments or otherwise) that count towards the final result for a period of two years following the date when

the examination was administered. Bachelor's programme reports and theses must remain available for visitations, accreditations, and inspections and shall be kept for seven years.

Article 4.6 Confirmation of the result of the final examination

1. The student is given the opportunity to take the final examination after they have provided sufficient proof that they have passed the components leading up to the final examination.
2. Examinations are scheduled each month.
3. The Examination Board will determine the result of the final examination, as well as the rules in relation to the manner in which the result of the examination is determined. The result of the examination is determined by the Examination Board within five weeks following the student's request. If the examination took place in July, the results will be determined no later than 31 August. Where needed in relation to entry requirements for a subsequent programme or the acceptance of a job, a statement can be released within five days indicating that the student has met the requirements of the examination. This is only possible if the student has met the criteria specified in paragraph 1.
4. Prior to determining the result of the final examination, the Examination Board may evaluate and assess the student's knowledge with respect to one or more components or aspects of the programme, if and to the degree to which the results of the related interim examinations justify this.

Article 4.7 Awarding distinctions

1. With due observance of the provisions set out in this Article, the Examination Board is responsible for the decision of whether a distinction shall be awarded and if so, which distinction.
2. The distinctions:
   a. "cum laude" shall be awarded if the weighted average result of the assessments of all components referred to in paragraph 3 is equal to or higher than 8.0, or
   b. "summa cum laude" shall be awarded if the weighted average result of the final assessment of the components referred to in paragraph 3 is equal to or higher than 9.0.
3. The distinction shall be calculated on the basis of all components of the examination programme for which a mark has been awarded on a scale from 1 to 10, with the exception of extra-curricular components.
4. The number of EC of the component referred to in paragraph 3 shall serve as the weighting factor for the calculation of the weighted average result, unless stipulated otherwise in the programme-specific part of these regulations.
5. The distinction shall not be awarded if more than 10 percent of the total study load of the examinations for the degree programme (being one or more components) has been re-sat or if interim examinations have been re-sat more than once, unless the Examination Board decides otherwise, stating the reasons for this decision.

Section 5. Study performance, guidance, counselling, and evaluation of education

Article 5.1 Study performance and support

1. The faculty dean is responsible for recording student results in such a way that, upon request, the Examination Board can respond by providing the student with an overview of the progress of the study programme within a reasonable timeframe.
2. The dean is responsible for providing adequate student counselling.

Article 5.2 Binding study advice regulations

1. On behalf of the dean, the Committee on Binding Study Advice for First-Year Students (Commissie Studieadvies Eerste Jaar) will advise students on continuing their degree programme. This will occur at the end of the first year, but no later than 31 August, that the student has been registered for the full-time Bachelor's programme as referred to in Article 7.8b of the Act.
2. The Committee on Binding Study Advice for First-Year Students shall issue a positive advice to students who have completed at least 39 EC of the first-year curriculum.
3. The Committee on Binding Study Advice for First-Year Students will issue a negative advice to students if a student does not meet the requirements referred to in paragraph 2, unless one or more of the personal circumstances as referred to in Article 5.4 of these regulations are applicable.
4. In case of a binding rejection, the Committee on Binding Study Advice for First-Year Students shall formulate a plan to inform the student of a negative binding study advice and provide the student with the opportunity to be heard before the binding study advice is issued.
5. In determining whether the required credits referred to in paragraph 2 have been achieved, exempted credits shall be counted.
6. If students have registered for a full-time programme after 31 January, the Committee on Binding Study Advice for First-Year Students will give a binding study advice at the end of their second study year. The Committee on Binding Study Advice for First-Year Students will give a positive advice to students if all components from the first year are concluded successfully.
7. Students who switch degree programmes after 31 January, within the Bachelor's programmes Chemistry, Molecular Life Sciences and Science, will receive the binding study advice as referred to in paragraph 1 at the end of the first academic year.
8. Students who terminate their enrolment before 1 March will not receive a binding study advice. If they re-enrol for the same programme in the following academic year, they will receive the binding study advice at the end of the relevant academic year. The provisions of the second sentence of paragraph 6 shall apply accordingly.
9. A student may appeal the negative binding study advice with the Examination Appeals Board within six weeks. The appeal does not suspend the validity of the binding study advice.

Article 5.3 Preliminary study advice

1. In anticipation of the advice referred to in Article 5.2, the Committee on Binding Study Advice for First-Year Students will issue a preliminary study advice at the end of the first semester (no later than 28 February) on the basis of the results of the student to date.
2. The preliminary study advice is intended as a warning for students who have failed to make adequate progress. The students in question will be invited for an interview with the student advisor to discuss how their study results could be improved or what other alternative programmes would be better suited to them.

Article 5.4 Personal circumstances

1. The Committee on Binding Study Advice for First-Year Students shall take into account personal circumstances in their binding study advice decision, as stated in Article 2.1 of the Act's Implementation Decree, insofar as these circumstances have been reported to the student advisor, a student dean, or another designated person, either by the student or by someone else on the student's behalf. The student may be asked to further substantiate or justify claims of personal circumstances.
2. Only personal circumstances mentioned in or supported by the Act are eligible.

Article 5.5 Duration of the period of rejection

1. Students who have received a negative binding study advice may not re-enrol in the relevant Bachelor's programme for a period of three years, or for any other Bachelor's programmes that the dean has determined fully or partially share the first year. In any case, this concerns the Bachelor's programmes in Chemistry, Molecular Life Sciences, and Science.
2. In the event that a student registers again for the degree programme after the period referred to in paragraph 1, this registration will be considered to be the first registration for the purposes of this section.

Article 5.6 No negative binding study advice or deferral of the decision

1. On the basis of the circumstances referred to in Article 5.4 of these regulations, the dean, having heard the Committee on Binding Study Advice for First-Year Students may decide not to attach a binding rejection to the negative study advice. Having heard the Committee on Binding Study Advice for First-Year Students, the dean may also decide to not yet attach a binding rejection to the negative study advice, on the basis of the circumstances referred to in Article 5.4.

2. If a negative study advice is not yet subject to a binding rejection pursuant to paragraph 1, the Committee on Binding Study Advice for First-Year Students will issue a binding rejection as stipulated in Article 5.2 before the end of the second study year if, by that time, the student has yet to obtain the 60 EC from the first year.

Article 5.7 Method of evaluation of education

In compliance with the quality assurance system of the university as described in the Handboek Kwaliteitszorg Onderwijs Radboud Universiteit (Radboud University quality assurance manual), the dean shall ensure that the education of the degree programmes is systematically evaluated.

PART III PROGRAMME-SPECIFIC PART

Section 6. Admission to the degree programme and education

Article 6.1 Substitute requirements for insufficient prior education

1. Deficiencies in prior education as referred to in the general provisions of these EER can be compensated through the successful completion, as deemed by the Examination Board, of a still to be determined test at the level of the VWO (pre-university education) final examination: English and mathematics B.
2. The Examination Board will appoint one or more examiners with the responsibility of administering the test(s) referred to in paragraph 1.

Article 6.2 Colloquium doctum

The admission assessment, referred to in Article 7.29 of the Act, is in relation to the following courses at the stated level: English and mathematics B.

Article 6.3 Admission of German secondary school students

For German students to be admitted to the Bachelor's programme in Computing Science, their Abitur needs to include a Grundkurs or Leistungskurs Mathematik which has received a passing grade of at least 7 (out of 15 points), at least one Science course (Biology, Physics, Computing Science, Chemistry) which has been successfully passed, and English which has been passed with at least 8 points.

Article 6.4 HBO first year

Admission on the basis of an HBO first year is only allowed if certificates at VWO level or equivalent have been obtained in the following school subjects: English and mathematics B.

Section 7. Structure and design

Article 7.1 Programme-specific learning outcomes

In addition to the general learning outcomes described in the general part of these EER, the Computing Science degree programme aims to achieve the following learning outcomes:

1. System development: Graduates are able to describe and select methods for system development; Graduates are able to solve system development problems at a basic level ("undergraduate level", that is to say problems that require a combination of standard methods, possibly with slight changes), in particular:
    a. thinking of a suitable application for a given situation;
    b. gathering system requirements;
    c. designing the application and justify the design;
    d. creating the application in a team and/or individually;
    e. evaluating the application based functionality and usability;
    f. documenting the final product.
2. Research: Graduates are able to recognise and select research methods (both general and field-specific); Graduates are able to solving research questions at a basic level, in particular:
    a. identifying a relevant problem;
    b. defining and justifying the appropriate research question in relation to this problem;
    c. selecting, describing, and justifying a suitable theoretical framework;
    d. conducting the study;
    e. reporting and presenting the results;

f. defining and justifying an (innovative) scientific solution for a problem.

3. Communication: Graduates are able to present subject-specific information at a basic level in a clear manner to colleagues (both in oral and written form) and document solutions; Graduates are able to fulfil various roles in collaboration.
4. Reflection: Graduates are able to indicate relevant areas in computing science and recognise their contributions for basic problems, in particular in relation to the following skills:
   a. reflecting on your own role as a junior scientist;
   b. participating in debates about the social implications of developments from your own field;
   c. specifying characteristic functions, roles, activities and competences of computer scientists in the professional field;
   d. making a reasoned choice for a specific follow-up education (or career path).
5. Graduates are able to execute the above-mentioned actions using knowledge from the following themes:
   a. Algorithms and theory
   b. Computer programming
   c. Computer systems and security
   d. Information and knowledge systems
   e. Mathematics
   f. Law
6. Students participating in the Cyber Security specialisation will also achieve the following learning outcomes:
   a. Graduates are able to analyse security problems and identify their causes;
   b. Graduates are able to describe and apply techniques, cryptography, and principles for security.
7. Students participating in the Software and Data Science specialisation will also achieve the following learning outcomes:
   a. Graduates are able to develop platform-specific applications for built-in computers ('embedded systems', 'devices');
   b. Graduates are able to express semantics of programming languages in appropriate formalisms;
   c. Graduates are able to analyse the behaviour of programs by means of computational models and tools.
8. Students participating in the Software and Data Science specialisation will also achieve the following learning outcomes:
   a. Graduates are able to distinguish techniques required for extracting relevant information from very large databases;
   b. Graduates are able to identify fundamental search methods, explain their differences, and select and implement them.
9. Students completing the Dual Bachelor's programme in Mathematics and Computing Science will also achieve the following learning outcomes:
   a. Graduates have more in-depth knowledge in mathematics and logic;
   b. Choice of one of the three specialisations (Cyber Security, Software Science, Data Science)

Article 7.2 Composition of the first year

Subject to the general part of these EER, the degree programme consists of the following components:

1. ***Compulsory components (60 EC):***

Course code	Course name	EC
NWI-IBC017	Calculus and Probability Theory	3
NWI-IBC016	Combinatorics	3
NWI-IPC025	Hacking in C	3
NWI-IPC031	Imperative Programming	6
NWI-IPC019	Information Modelling and Databases	6
SOW-BKI125	Introduction Artificial Intelligence A	3
NWI-IPC002	Languages and Automata	3
NWI-IPI004	Logic and Applications	6
NWI-IPC020	Mathematical Structures	3
NWI-IPC017	Matrix Calculation	3
NWI-IPI005	Object Oriented Programming	6
NWI-IPC006	Processors	3
NWI-IPC023	Requirements Engineering	3
NWI-IPC030	Research & Development: Project	3
NWI-IPC021	Security	6

Article 7.4 Composition of the second and third year of the programme

The second and third year of the degree programme contain compulsory components worth 54 EC (see 1 below) and the choice between two of the three specialisations of 12 EC each (section 2 below). Additionally, there is space for a minor of 15 EC (section 3 below) and free elective space of 12 EC (section 4 below). During the core programme phase, the student must also complete the portfolio, with a study load of 3 EC (section 5 below). Finally, there is a Bachelor's thesis of 12 EC (section 6 below). The total number of EC is 120.

1. ***Shared curriculum (54 EC)***

Course code	Course name	EC
NWI-IBC035	Academic Writing for Computer Scientists	3
NWI-IBC027	Algorithms and Data Structures	6
NWI-IBC028	Complexity	3
NWI-IBC003	Computability	3

NWI-IBC040	Functional Programming	6
NWI-I00036	IT and Society	3
NWI-IBC020	Information Systems	3
NWI-IBC047	Law, Privacy and Identity	3
NWI-IBC048	Networks and Security	6
NWI-IBC019	Operating Systems	3
NWI-IBC042	Parallel Computing	3
NWI-IBI007	Research Methods	3
NWI-IBC026	Semantics and Correctness	3
NWI-IBI001	Software Engineering	6

2. Specialisation (24 EC)

Choice of one of the following specialisations:

a. Cyber Security

Course code	Course name	EC
NWI-IBC023	Introduction to Cryptography	6
NWI-IBC034	Operating Systems Security	3
NWI-IPC026	Web Security	3

b. Software Science

Course code	Course name	EC
NWI-IBC041	New Devices Lab	6
NWI-IBC025	Semantics and Rewriting	3
NWI-IBC024	Software Verification	3

c. Data Science

Course code	Course name	EC
NWI-IBC036	Big Data	6
NWI-IBI008	Data Mining	6

3. Minor (15 EC)

4. Free choice electives (12 EC)

In addition to the requirements established in Article 3.3 paragraph 3, the free elective must also meet the following requirement:

1. normally a free elective is from the second or third year of the Radboud University degree curriculum. If the course has no demonstrable links with computing science, a course can also be selected from the first year of the relevant degree programme.

5. Portfolio (3 EC)

The course NWI-IBI010 Reflection and Vocational Orientation fulfils the role of portfolio in the Computing Science degree programme.

6. Bachelor's thesis (12 EC)

Article 7.5 Unauthorised minors

The programme does not have an educational minor. The Computing Science minor cannot be chosen as a minor within the Computing Science degree programme.

Section 8. Transitional provisions

Article 8.1 Transitional provisions cohort 2016-2017

Due to the transition to an English Bachelor's programme, the language of instruction of all courses has now switched to English while the content, learning outcomes and course codes have remained the same. These courses are considered to be the same course for students who started in 2016-2017. The English name is shown below. Deviating courses are shown in *italics* (see Article **8.1.3.** for the transition provisions).

This is the curriculum for students who started the programme in the 2016-2017 academic year:

8.1.1 Composition of the first year (60 EC)

Course code	Course name	EC
NWI-IPI004	Beweren en Bewijzen (renamed Logic and Applications)	6
NWI-IPC024	*Databases (renamed Information Modelling and Databases)*	*3*
NWI-IPC025	Hacking in C	3
NWI-IPC014	*Imperatief Programmeren 1 (renamed Imperative Programming)*	*3*
NWI-IPC015	*Imperatief Programmeren 2 (renamed Imperative Programming)*	*3*

SOW-BKI121	*Introduction AI A (renamed Introduction Artificial Intelligence A)*	*4*
NWI-IPC017	*Matrixrekenen* (renamed Matrix Calculation)	3
NWI-IPC019	*Modelleren (renamed Information Modelling and Databases)*	*3*
NWI-IPI005	*Object Oriëntatie* (renamed Object Oriented Programming)	6
NWI-IPC006	*Processoren* (renamed Processors)	3
NWI-IPC029	*Research & Development: Project*	*6*
NWI-IPC021	Security	6
NWI-IPC002	*Talen en Automaten* (renamed Languages and Automata)	3
NWI-IPC018	*Wat is informatica?*	*2*
NWI-IPC026	Web Security	3
NWI-IPC020	*Wiskundige Structuren* (renamed Mathematical Structures)	3

8.1.2 Composition of the second and third year of the programme

The second and third year of the degree programme contain compulsory components worth 54 EC (see 1 below) and the choice between two of the three specialisations of 24 EC each (section 2 below). Additionally, there is space for a minor of 15 EC (section 3 below) and free elective space of 12 EC (section 4 below). During the core programme phase, the student must also complete the portfolio, with a study load of 3 EC (section 5 below). Finally, there is a Bachelor's thesis of 12 EC (section 6 below). The total number of EC is 120.

1. Shared curriculum (54 EC)

Course code	Course name	EC
NWI-IBC035	Academisch Schrijven voor informatici (renamed Academic Writing for Computer Scientists)	3
NWI-IBC027	*Algoritmen en Datastructuren* (renamed Algorithms and Data Structures)	6
NWI-IBC003	*Berekenbaarheid* (renamed Computability)	3
NWI-IBC017	*Calculus en Kansrekenen* (renamed Calculus and Probability Theory)	3
NWI-IBC016	*Combinatoriek* (renamed Combinatorics)	3
NWI-IBC028	*Complexiteit* (renamed Complexity)	3
NWI-IBC029	*Functioneel Programmeren 1 (*renamed Functional Programming*)*	*3*
NWI-I00036	*ICT en Samenleving 1* (renamed IT and Society)	3
NWI-IBC020	*Informatiesystemen* (renamed Information Systems)	3
NWI-IBC021	*Netwerken en Gedistribueerde Systemen (*renamed Networks and Distributed Systems*)*	*6*
NWI-IBI007	*Onderzoeksmethoden* (renamed Research Methods)	3
NWI-IBC019	Operating Systems	3

NWI-IPC023	Requirements Engineering	3
NWI-IBC026	*Semantiek en Correctheid* (renamed Semantics and Correctness)	3
NWI-IBI001	Software Engineering	6

2. *Specialisation (24 EC)*

a. *Cyber Security specialisation:*

Course code	Course name	EC
NWI-IBC023	Introduction to Cryptography	6
NWI-IBC022	Network Security	*3*
NWI-IBC034	Operating Systems Security	3
NWI-IBC039	Organising Cyber Security	*6*
NWI-IBC038	Privacy and Identity	*3*
NWI-IBC037	*Recht voor Informatici (renamed Law for Computer Scientists)*	*3*

b. *Computing specialisation:*

Course code	Course name	EC
NWI-IBC025	*Berekeningsmodellen* (renamed Semantics and Rewriting)	3
NWI-IBC036	Big Data	6
NWI-IBI008	Data Mining	6
NWI-IBC030	*Functioneel Programmeren 2 (*renamed Functional Programming*)*	*3*
NWI-IBC031	*New Devices Lab*	*3*
NWI-IBC024	Software Verification	3

3. *Minor space (15 EC)*

4. *Free choice electives (12 EC)*

In addition to the requirements established in Article 3.3 paragraph 3, the free elective must also meet the following requirement:

1. normally a free elective is from the second and third year of the Radboud University degree curriculum. If the course has no demonstrable links with computing science, a course can also be selected from the first year of the relevant degree programme.

5. *Portfolio (3 EC)*

The course NWI-IBI010 Reflection and Vocational Orientation fulfils the role of portfolio in the Computing Science degree programme.

6. ***Bachelor's thesis (12 EC)***

8.1.3 Details

- *NWI-IPC018 Wat is informatica?* (2 EC) has not been offered since 2017-2018. Instead, you are allowed to choose another component from the Computing Science programme that is not yet part of your programme.
- *NWI-IPC014 Imperatief Programmeren 1* (3 EC) has not been offered since 2017-2018. Instead, in consultation with your student advisor and lecturer, you must complete the first half of the course NWI-IPC031 Imperative Programming (6 EC).
- *NWI-IPC015 Imperatief Programmeren 2* (3 EC) has not been offered since 2017-2018. Instead, in consultation with your student advisor and lecturer, you must complete the second half of the course NWI-IPC031 Imperative Programming (6 EC).
- *SOW-BKI121 Introduction AI A* (4 EC) has not been offered since 2017-2018. Instead, you must complete SOW-BKI135 Introduction Artificial Intelligence A (3 EC). In consultation with the student advisor, you will determine how to fill the remaining 1 EC.
- *NWI-IPC029 Research & Development* (6 EC) has not been offered as a 6 EC course since 2017-2018. Instead, you are allowed to choose NWI-IPC030 Research & Development (3 EC) in combination with another 3 EC course from the Computing Science programme that is not yet part of your examination programme.
- *NWI-IBC029 Functioneel Programmeren 1* (3 EC) has not been offered since 2018-2019. Instead, in consultation with your student advisor and lecturer, you must complete the first half of the course NWI-IBC040 Functional Programming (6 EC).
- *NWI-IBC030 Functioneel Programmeren 2* (3 EC) has not been offered since 2018-2019. Instead, in consultation with your student advisor and lecturer, you must complete the second half of the course NWI-IBC040 Functional Programming (6 EC).
- *NWI-IBC031 New Devices Lab* (3 EC) has not been offered as a 3 EC course since 2018-2019 Instead, in consultation with your student advisor and lecturer, you must complete the first half of the course NWI-IBC041 New Devices Lab (6 EC).
- *NWI-IPC019 Modelleren* (3 EC) has not been offered since 2019-2020. Instead, in consultation with your student advisor and lecturer, you must complete the first half of the course NWI-IPC033 Information Modeling and Databases (6 EC).
- *NWI-IPC024 Databases* (3 EC) has not been offered since 2019-2020. Instead, in consultation with your student advisor and lecturer, you must complete the second half of the course NWI-IPC033 Information Modeling and Databases (6 EC).
- *NWI-IBC021 Networks and Distributed Systems (6 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 6 EC from the Computing Science offer that is not yet part of the examination programme. NWI-IBC048 Networks and Security (6 EC) should be considered as the first candidate.
- *NWI-IPC039 Organizing Cyber Security (6 EC)* will be offered for the last time in 2020-2021. Instead, in consultation with your student advisor, you may select an alternative course worth 6 EC from the Computing Science offer that is not yet part of the examination programme.

- *NWI-IBC022 Network Security (3 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 3 EC from the Computing Science offer that is not yet part of the examination programme.
- *NWI-IBC038 Privacy and Identity (3 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 3 EC from the Computing Science offer that is not yet part of the examination programme.

Article 8.2 Transitional provisions cohort 2017-2018

Due to the transition to an English Bachelor's programme, the language of instruction of all courses has now switched to English while the content, learning outcomes and course codes have remained the same. These courses are considered to be the same courses for students who started in 2017-2018. The English name is shown below. Deviating courses are shown in *italics* (see Article **8.2.3.** for the transition provisions).

This is the curriculum for students who started the programme in the 2017-2018 academic year:

8.2.1 Composition of the first year (60 EC)

8. Course code	Course name	EC
NWI-IPI004	Assertion and Argumentation (renamed Logic and Applications)	6
NWI-IBC017	Calculus en Kansrekenen (renamed Calculus and Probability Theory)	3
NWI-IBC016	Combinatoriek (renamed Combinatorics)	3
NWI-IPC024	*Databases (renamed Information Modelling and Databases)*	*3*
NWI-IPC025	Hacking in C	3
NWI-IPC031	Imperatief Programmeren (renamed Imperative Programming)	6
SOW-BKI125	Introduction to Artificial Intelligence for CS (renamed Introduction Artificial Intelligence A)	3
NWI-IPC017	Matrixrekenen (renamed Matrix Calculation)	3
NWI-IPC019	*Modelleren (renamed Information Modelling and Databases)*	*3*
NWI-IPI005	Object Orientation (renamed Object Oriented Programming)	6
NWI-IPC006	Processoren (renamed Processors)	3
NWI-IPC023	Requirements Engineering	3
NWI-IPC030	Research & Development: Project	3
NWI-IPC021	Security	6
NWI-IPC002	Talen en Automaten (renamed Languages and Automata)	3
NWI-IPC020	Wiskundige Structuren (renamed Mathematical Structures)	3

8.2.2 Composition of the second and third year of the programme

The second and third year of the degree programme contain compulsory components worth 54 EC (see 1 below) and the choice between two of the three specialisations of 24 EC each (section 2 below). Additionally, there is space for a minor of 15 EC (section 3 below) and free elective space of 12 EC (section 4 below). During the core programme phase, the student must also complete the portfolio, with a study load of 3 EC (section 5 below). Finally, there is a Bachelor's thesis of 12 EC (section 6 below). The total number of EC is 120.

1. Shared curriculum (54 EC)

Course code	Course name	EC
NWI-IBC035	Academisch Schrijven voor informatici (renamed Academic Writing for Computer Scientists)	3
NWI-IBC027	Algoritmen en Datastructuren (renamed Algorithms and Data Structures)	6
NWI-IBC003	Berekenbaarheid (renamed Computability)	3
NWI-IBC028	Complexiteit (renamed Complexity)	3
NWI-IBC040	Functional Programming	6
NWI-I00036	ICT en Samenleving (renamed IT and Society)	3
NWI-IBC020	Informatiesystemen (renamed Information Systems)	3
NWI-IBC021	*Networks and Distributed Systems*	*6*
NWI-IBC019	Operating Systems	3
NWI-IBC042	Parallel Computing	3
NWI-IBC037	*Recht voor Informatici (renamed Law for Computer Scientists)*	*3*
NWI-IBI007	Research Methods	3
NWI-IBC026	Semantiek en Correctheid (renamed Semantics and Correctness)	3
NWI-IBI001	Software Engineering	6

2. Specialisation (24 EC)

a. Cyber Security specialisation:

Course code	Course name	EC
NWI-IBC023	Introduction to Cryptography	6
NWI-IBC022	*Network Security*	*3*
NWI-IBC034	Operating Systems Security	3
NWI-IBC039	*Organising Cyber Security*	*6*
NWI-IBC038	*Privacy and Identity*	*3*
NWI-IPC026	Web Security	3

b. Computing specialisation:

Course code	Course name	EC
NWI-IBC025	Berekeningsmodellen (renamed Semantics and Rewriting)	3
NWI-IBC036	Big Data	6
NWI-IBI008	Data Mining	6
NWI-IBC041	New Devices Lab	6
NWI-IBC024	Software Verification	3

3. Minor space (15 EC)

4. Free choice electives (12 EC)

In addition to the requirements established in Article 3.3 paragraph 3, the free elective must also meet the following requirement:

1. normally a free elective is from the second and third year of the Radboud University degree curriculum. If the course has no demonstrable links with computing science, a course can also be selected from the first year of the relevant degree programme.

5. Portfolio (3 EC)

The course NWI-IBI010 Reflection and Vocational Orientation fulfils the role of portfolio in the Computing Science degree programme.

6. Bachelor's thesis (12 EC)

8.2.3 Details

- *NWI-IPC019 Modelleren* (3 EC) has not been offered since 2019-2020. Instead, in consultation with your student advisor and lecturer, you must complete the first half of the course NWI-IPC033 Information Modeling and Databases (6 EC).
- *NWI-IPC024 Databases* (3 EC) has not been offered since 2019-2020. Instead, in consultation with your student advisor and lecturer, you must complete the second half of the course NWI-IPC033 Information Modeling and Databases (6 EC).
- *NWI-IBC021 Networks and Distributed Systems (6 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 6 EC from the Computing Science offer that is not yet part of the examination programme. NWI-IBC048 Networks and Security (6 EC) should be considered as the first candidate.
- *NWI-IPC039 Organizing Cyber Security (6 EC)* will be offered for the last time in 2020-2021. Instead, in consultation with your student advisor, you may select an alternative course worth 6 EC from the Computing Science offer that is not yet part of the examination programme.
- *NWI-IBC022 Network Security (3 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 3 EC from the Computing Science offer that is not yet part of the examination programme.

- *NWI-IBC038 Privacy and Identity (3 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 3 EC from the Computing Science offer that is not yet part of the examination programme.

Article 8.3 Transitional provisions cohort 2018-2019

Article **8.3.3** stipulates the transitional provisions.

This is the curriculum for students who started the programme in the 2018-2019 academic year (deviating courses are shown in *italics*):

8.3.1 Composition of the first year (60 EC)

9. Course code	Course name	EC
NWI-IBC017	Calculus and Probability Theory	3
NWI-IBC016	Combinatorics	3
NWI-IPC024	*Databases (renamed Information Modelling and Databases)*	*3*
NWI-IPC025	Hacking in C	3
NWI-IPC031	Imperative Programming	6
NWI-IPC019	*Information Modelling (renamed Information Modelling and Databases)*	*3*
SOW-BKI125	Introduction to Artificial Intelligence for CS (renamed Introduction Artificial Intelligence A)	3
NWI-IPC002	Languages and Automata	3
NWI-IPI004	Logic and Applications	6
NWI-IPC020	Mathematical Structures	3
NWI-IPC017	Matrix Calculation	3
NWI-IPI005	Object Oriented Programming	6
NWI-IPC006	Processors	3
NWI-IPC023	Requirements Engineering	3
NWI-IPC030	Research & Development: Project	3
NWI-IPC021	Security	6

8.3.2 Composition of the second and third year of the programme

The second and third year of the degree programme contain compulsory components worth 54 EC (see 1 below) and the choice between two of the three specialisations of 24 EC each (section 2 below). Additionally, there is space for a minor of 15 EC (section 3 below) and free elective space of 12 EC (section 4 below). During the core programme phase, the student must also complete the portfolio, with a study load of 3 EC (section 5 below). Finally, there is a Bachelor's thesis of 12 EC (section 6 below). The total number of EC is 120.

1. Shared curriculum (54 EC)

Course code	Course name	EC
NWI-IBC035	Academic Writing for CS	3
NWI-IBC027	Algorithms and Data Structures	6
NWI-IBC028	Complexity	3
NWI-IBC003	Computability	3
NWI-IBC040	Functional Programming	6
NWI-I00036	IT and Society	3
NWI-IBC020	Information Systems	3
NWI-IBC037	Law for Computer Scientists	3
NWI-IBC021	*Networks and Distributed Systems*	*6*
NWI-IBC019	Operating Systems	3
NWI-IBC042	Parallel Computing	3
NWI-IBI007	Research Methods	3
NWI-IBC026	Semantics and Correctness	3
NWI-IBI001	Software Engineering	6

2. Specialisation (24 EC)

a. Cyber Security specialisation:

Course code	Course name	EC
NWI-IBC023	Introduction to Cryptography	6
NWI-IBC022	*Network Security*	*3*
NWI-IBC034	Operating Systems Security	3
NWI-IBC039	*Organising Cyber Security*	*6*
NWI-IBC038	*Privacy and Identity*	*3*
NWI-IPC026	Web Security	3

b. Software & Data Science specialisation:

Course code	Course name	EC
NWI-IBC036	Big Data	6
NWI-IBI008	Data Mining	6
NWI-IBC041	New Devices Lab	6

NWI-IBC025	Semantics and Rewriting	3
NWI-IBC024	Software Verification	3

3. Minor space (15 EC)

4. Free choice electives (12 EC)

In addition to the requirements established in Article 3.3 paragraph 3, the free elective must also meet the following requirement:

1. normally a free elective is from the second and third year of the Radboud University degree curriculum. If the course has no demonstrable links with computing science, a course can also be selected from the first year of the relevant degree programme.

5. Portfolio (3 EC)

The course NWI-IBI010 Reflection and Vocational Orientation fulfils the role of portfolio in the Computing Science degree programme.

6. Bachelor's thesis (12 EC)

8.3.3 Details

- *NWI-IPC019 Information Modeling* (3 EC) has not been offered since 2019-2020. Instead, in consultation with your student advisor and lecturer, you must complete the first half of the course NWI-IPC019 Information Modelling and Databases (6 EC).
- *NWI-IPC024 Databases* (3 EC) has not been offered since 2019-2020. Instead, in consultation with your student advisor and lecturer, you must complete the second half of the course NWI-IPC019 Information Modelling and Databases (6 EC).
- *NWI-IBC021 Networks and Distributed Systems (6 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 6 EC from the Computing Science offer that is not yet part of the examination programme. NWI-IBC048 Networks and Security (6 EC) should be considered as the first candidate.
- *NWI-IPC039 Organizing Cyber Security (6 EC)* will be offered for the last time in 2020-2021. Instead, in consultation with your student advisor, you may select an alternative course worth 6 EC from the Computing Science offer that is not yet part of the examination programme.
- *NWI-IBC022 Network Security (3 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 3 EC from the Computing Science offer that is not yet part of the examination programme.
- *NWI-IBC038 Privacy and Identity (3 EC)* will not be offered from 2020-2021 onward. Instead, in consultation with your student advisor, you must select a course worth 3 EC from the Computing Science offer that is not yet part of the examination programme.

Article 8.4 Transitional provisions cohort 2019-2020

Article **8.4.3** stipulates the transitional provisions.

This is the curriculum for students who started the programme in the 2019-2020 academic year (deviating courses are shown in *italics*):

8.4.1 Composition of the first year (60 EC)

10. Course code	Course name	EC
NWI-IBC017	Calculus and Probability Theory	3
NWI-IBC016	Combinatorics	3
NWI-IPC033	Information Modelling and Databases	*6*
NWI-IPC025	Hacking in C	3
NWI-IPC031	Imperative Programming	6
SOW-BKI125	Introduction Artificial Intelligence A	3
NWI-IPC002	Languages and Automata	3
NWI-IPI004	Logic and Applications	6
NWI-IPC020	Mathematical Structures	3
NWI-IPC017	Matrix Calculation	3
NWI-IPI005	Object Oriented Programming	6
NWI-IPC006	Processors	3
NWI-IPC023	Requirements Engineering	3
NWI-IPC030	Research & Development: Project	3
NWI-IPC021	Security	6

8.4.2 Composition of the second and third year of the programme

The second and third year of the degree programme contain compulsory components worth 54 EC (see 1 below) and the choice between two of the three specialisations of 12 EC each, namely Cyber Security and Software and Data Science (see 2 below). Additionally, there is space for a minor of 15 EC (section 3 below) and free elective space of 12 EC (section 4 below). During the core programme phase, the student must also complete the portfolio, with a study load of 3 EC (section 5 below). Finally, there is a Bachelor's thesis of 12 EC (section 6 below). The total number of EC is 120.

7. Shared curriculum (54 EC)

Course code	Course name	EC
NWI-IBC035	Academic Writing for CS	3
NWI-IBC027	Algorithms and Data Structures	6
NWI-IBC028	Complexity	3
NWI-IBC003	Computability	3

NWI-IBC040	Functional Programming	6
NWI-I00036	IT and Society	3
NWI-IBC020	Information Systems	3
NWI-IBC037	*Law for Computer Scientists*	*3*
NWI-IBC021	*Networks and Distributed Systems*	*6*
NWI-IBC019	Operating Systems	3
NWI-IBC042	Parallel Computing	3
NWI-IBI007	Research Methods	3
NWI-IBC026	Semantics and Correctness	3
NWI-IBI001	Software Engineering	6

8. Specialisation (24 EC)

a. Cyber Security specialisation:

Course code	Course name	EC
NWI-IBC023	Introduction to Cryptography	6
NWI-IBC034	Operating Systems Security	3
NWI-IPC026	Web Security	3

b. Specialisation in Software Science:

Course code	Course name	EC
NWI-IBC041	New Devices Lab	6
NWI-IBC025	Semantics and Rewriting	3
NWI-IBC024	Software Verification	3

c. Specialisation in Data Science:

Course code	Course name	EC
NWI-IBC036	Big Data	6
NWI-IBI008	Data Mining	6

9. Minor space (15 EC)

10. Free choice electives (12 EC)

In addition to the requirements established in Article 3.3 paragraph 3, the free elective must also meet the following requirement:

1. normally a free elective is from the second and third year of the Radboud University degree curriculum. If the course has no demonstrable links with computing science, a course can also be selected from the first year of the relevant degree programme.

11. Portfolio (3 EC)

The course NWI-IBI010 Reflection and Vocational Orientation fulfils the role of portfolio in the Computing Science degree programme.

12. Bachelor's thesis (12 EC)

8.4.3 Details

- The second year of the 2020-2021 programme will start earlier for students who started in 2019-2020. The first year remains the same. This only affects the choice of specialisations (2 out of 3), the positioning of courses, and the replacement of the next two courses:

- *NWI-IBC021 Networks and Distributed Systems (6 EC)* is replaced by NWI-IBC048 Networks and Security (6 EC).
- NWI-IBC037 Law for Computer Scientists (3 EC) is replaced by NWI-IBC047 Law, Privacy and Identity (3 EC).

PART IV FINAL PROVISIONS

Section 9. Final provisions

Article 9.1 Safety net scheme and hardship clause

1. In all cases not covered fully or clearly by these regulations, the decision lies with the dean.
2. In all cases in which these regulations may result in an unreasonable or unfair situation for individual students, the Examination Board or the dean is authorised to make an exception to the provisions in these Education and Examination Regulations.

Article 9.2 Establishment and amendments

1. Contrary to the provisions in Article 7 of the Structure Regulations, these regulations are drawn up or amended by the dean after receiving advice from the programme committees and after having obtained the approval of the Joint Assembly of the faculty.
2. An amendment to these regulations has no impact on the current academic year, unless this would disproportionately damage the interest of the students.
3. In derogation from paragraph 1, the dean is authorised to drop elective components of the curriculum should the circumstances be deemed impossible to offer the course.

Article 9.3 Entry into force

These regulations enter into force on 1 September 2020

Article 9.4 Publication

1. The dean is responsible for publishing these regulations and any amendments thereto.
2. Interested parties may consult these regulations via the prospectus.

As established by the dean on 15 July 2020.

APPENDIX I REGULATIONS ON FRAUD DURING INTERIM EXAMINATIONS AND EXAMINATIONS

Paragraph 1 Introductory provisions

Article 1. Purpose of these regulations

1. To prevent fraud during interim examinations and examinations as referred to in article 7.12b *WHW,* the executive board of Radboud University (hereinafter: RU) adopts the following regulations.

2. For the harmonization of the provisions in these regulations between faculties, these regulations have been laid down as 'comply-explain' regulations (*pas-toe-leg-uit-regeling).*

Article 2. Scope of these regulations

1. Except for the provisions referred to in this appendix, these regulations apply both to the initial RU programmes and for the students who have registered for these programmes.

2. The executive board may decide, in a separate decision, to apply these regulations *mutatis mutandis* to other programmes offered by RU.

Article 3. Definitions

The terms that are used in these regulations – in so far as these terms are also used in the Higher Education and Research Act (*Wet op het Hoger onderwijs en Wetenschappelijk onderzoek (*hereinafter: WHW) – have the same meaning that is given to these terms in the WHW.

Paragraph 2 Definition fraud, procedure and sanctions

Article 4. Definition of fraud

1. At RU, fraud is understood to mean any act or omission by student which, in its nature, is intended to have as an effect that proper assessment of the knowledge, understanding and skills of that student, or another student, is made fully or partially impossible.
2. Fraud is in any case understood to mean:
    a. fraud when taking written interim examinations, including
        i. having materials available which are not permitted under the House Rules Examinations Rooms RU Regulations (*Regeling Huisregels Tentamenruimten RU);*
        ii. copying or exchanging information;
        iii. passing oneself off as someone else, or being represented by someone else during interim examinations;
    b. fraud when producing theses and other papers, including

i. plagiarism in the sense of using or copying someone else's texts, data or ideas without complete and correct source references, plagiarism in the sense of copying the work of another student and presenting this as one's own work and other specifically academic forms of plagiarism;
ii. fabricating (making up) and/or falsifying (distorting) research data;
iii. submitting a thesis or another paper that was written by someone else.

c. Other fraud in the context of interim examinations or examinations, including
i. taking possession of assignments, answer keys and the like, prior to the time the interim examination or examination.

3. An attempt to commit fraud will also be seen as fraud for the purpose of these regulations.

Article 5. Procedure for suspicion of fraud

1. When fraud is suspected, the board of examiners or the examiner immediately informs the student of this suspicion. If the suspicion of fraud is established when the interim examination or the examination is administered, the board of examiners or the examiner will allow the student to complete the interim examination or the examination.

2. The board of examiners or the examiner may order the student to make any material related to the suspicion of fraud available to them.

3. The board of examiners or the examiner may order the student to make any material related to the suspicion of fraud available to them.

4. For the purposes of the provisions in paragraphs 1 and 2 of the present article, examiner is also understood to mean the invigilator or any other RU member or staff.

Article 6. Procedure for investigation and determination of fraud

1. The board of examiners makes the report referred to in article 5 available for the student without delay and then starts an investigation into the matter. The board of examiners provides the student with the opportunity to respond to the report in writing. The board of examiners hears both the examiner and the student.

2. Within four weeks following the date the report was made available to the student, the board of examiners decides whether fraud was actually committed. The board of examiners informs both the student and the examiner of their decision in writing. The four-week period may be extended by two weeks.

3. If fraud is established, the board of examiners declares the relevant interim examination or examination invalid.

4. If fraud is established, the board of examiners records both the fact that fraud was committed and the sanction imposed in the student's student file.

Article 7. Sanctions

1. If the board of examiners has established fraud has been committed, the board of examiners may:
   a. determine that the student may not sit one or more interim examinations or examinations during a period to be set by the board of examiners, which period will be a maximum of one year;
   b. determine that no distinction will be awarded on the degree certificate;
   c. make a recommendation to the Dean of the Honours Academy that the student should not be admitted to the honours programme of the university or the faculty should be ended.

   If the board of examiners has established that *serious* fraud has been committed, the board of examiners may also

   d. make a recommendation to the executive board that the student's registration for a programme should be terminated with definitive effect.

2. After the board of examiners has established that serious fraud has been committed, the executive board – upon the board of examiners' recommendation – may terminate the the student's registration for a programme with definitive effect.
3. The sanctions as referred to in this article are imposed as from the day following the date the student is notified of the decision that sanctions are imposed.

Paragraph 3 Transitional provisions

[no transitory regulations]

Paragraph 4 Final provisions

Article 8.

1. Decisions pursuant to these regulations may be sent to the student digitally and/or by email.

2. The student can appeal against any decision made under these regulations, within six weeks following the date on the relevant decision, by lodging a notice of appeal at the Examinations Appeals Board (*College voor Beroep van de Examens (CBE).*

Article 9. Adoption and amendment

1. These regulations have been adopted by the executive board in accordance with the 'comply-explain' principle.

2. In so far as the content of these regulations relates to the duties and powers of the faculty's dean or the duties and powers of the programme's board of examiners, the content must also be confirmed by that dean of that board of examiners. Without any comments by the dean or the board of examiners as referred to in the first paragraph of the present article, confirmation will take place five months after the regulations have been adopted.

Article 10. Effect

With due observance of the provisions in article 9, these regulations take effect on 1 September 2018. These regulations will then replace any previous regulations.

Article 11. Publication

1. The executive board sees to the appropriate publication and possible amendments of these regulations.

2. For the purpose of appropriate and clear provision of information to students and prospect students, the dean and the board of examiners will include these regulations, every year, as an appendix to the Education and Examination (*Onderwijs- en Examenreglement (OER)*) and as an appendix to the Rules and Guidelines (*Regels en Richtlijnen (RR))* of the programme.

Thus adopted by the executive board on 13 November 2017.