

Curriculum VIA Engineering

Joint regulations for

Bygningsingeniør/Civil Engineering
Eksportingeniør/Global Business Engineering
Klima og Forsyningsingeniør/ Climate and Supply Engineering
Maskiningeniør/Mechanical Engineering
Produktionsingeniør
Softwareteknologiingeniør/Software Technology Engineering
Materialeingeniør/Materials Science Engineering

Valid from August 2017
(August 2020)

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1 Credit provisions

The student is obliged to provide information about completed education elements from another Danish or foreign higher education and employment that is likely to give credit. VIA approves credits in each case, based on completed course elements and employment, which compares to courses, parts of the programme and internship. The decision is based on a professional assessment.

Workshop Practice

Students with relevant practical training of a duration of at least 2 years are exempt from relevant workshop practice. Exemptions may also apply if the student can prove that sufficient knowledge of workshop practical conditions has been acquired in another way.

Prior to the start of the workshop, a well-founded application with relevant documentation on acquired knowledge on workshop practice must be forwarded via the study counsellors to the head of programme. The head of programme decides whether a full or a partial exemption can be granted.

Engineering Internship

Students with relevant vocational training may in exceptional cases be credited from parts of or the entire integrated internship. Exemption can only be made if the student can prove to have acquired sufficient experience in engineering in practice.

A well-founded application with relevant documentation on acquired engineering work must be forwarded via the study counsellors to the head of programme who decides on a full or partial exemption.

Studies abroad

The internship as well as elective courses and the 6th semester project may be completed abroad after application to and agreement with the head of programme.

Students who, according to agreement, have studied at a foreign university or engineering education and passed individual courses there, may have these accredited after individual assessment. In connection with the prior approval and after the study visit, the student must consent to VIA's requirement to obtain the necessary information for the purpose of the assessment.

An application for completion of courses and internships abroad must be forwarded to the study counsellor within the time limit for applying for a stay abroad. The deadline for applying for a study abroad is 20th September for studies abroad in spring semester, and 20th March for studies abroad in fall semesters. The application must at least contain:

- Description of the duration of the stay
- Content, learning objectives, test form and extent (ECTS) for the courses expected to be completed.

2 Requirements for written assignments and projects

For written assignments and projects on the programme, the formal requirements, described in the Guide- lines for projects at VIA Engineering, apply.

3 Teaching methods and study activities

The programme operates according to the following teaching- and working methods:

- Classroom teaching
- Group work
- Self-study and individual execution of assignments
- Project work, individual and in groups
- Laboratory assignments
- Internship
- Company visits

4 Workshop practice

Students who, after an individual assessment, do not possess the necessary practical prerequisites for completing the programme, must participate in mandatory workshop courses that provide insight into the practical performance of assignments in the field of the programme.

Each course has a duration of one week. It is completed concurrently with the basic engineering programme and prior to the internship, either in teaching-free periods or as an integral part parallel with the teaching.

Attendance, active participation and understanding of the subject is a prerequisite for the approval of the workshop practice.

5 Elective courses

Students on VIA Engineering Programmes have the opportunity to choose an elective course of 5 ECTS outside the students own programme.

6 Compulsory attendance and study activity

Compulsory attendance means the requirements for attendance, hand in of assignments, projects and the like, as described in the curriculums of the programmes.

Fulfilment of the participation requirement is a prerequisite for participating in tests on the programme.

A student is considered study active only as long as the compulsory attendance for the programme (see immediately above) is met.

Lack of study activity may affect whether a student is entitled to the State Educational Support (SU).

If a student has not passed at least one exam on the programme for a continuous period of at least 1 year, the student will be dismissed from the programme in accordance with the Executive Orders on tests. The student is informed of the missing study activity before being dismissed.

7 Reading texts in foreign languages

Lecturing on the programme is in Danish and / or English, according to specifications in the programme part of the curriculum.

Texts in English may appear in both Danish and English taught programmes. Reading the texts requires English level B, which is a prerequisite for the completion of the programme.

8 Rules on leave of absence

It is possible to obtain leave from the study in accordance with the provisions of Executive Order regarding access to vocational academy programmes / professorship bachelor programmes. Application should be sent to the head of programme and will be processed individually.

The following applies:

- Leave can only be granted once all courses in the first year of study have been passed (60 ECTS).
- Leave is usually granted for entire semesters (maternity leave and absence due to illness may, however, be exceptions) and it is recommended to apply for a full year leave if it takes place within the first year of study.
- During leave, students are considered inactive according to the SU and the calculation of the study period.
- Leave based on relevant reasons may be granted for up to 2 semesters.
- In special situations, leave may be granted for up to 4 semesters.
- During the leave period, students may not participate in the classes and tests within the programme from which the student has leave.

9 Examination and test rules

9.1 Test forms and assessment

Test forms

The test form must ensure that an individual examination and assessment of the student is conducted.

The assessment is conducted on the basis of the following test forms

1. Written exam
2. Oral exam
3. Oral exam with a project report, a process report and joint oral presentation as a basis for individual examination and assessment
4. Compulsory tests, assignments, presentation or similar, according to specified criteria for participation in the teaching

5. Participation in internship with ongoing reporting
6. Combinations of the above test forms 1) to 4)

The test form and the duration of the examination for the individual course and requirements for participating in exams can be found in the curriculums of the programmes. It will also appear from the course description whether the examination is held as an individual or group examination.

If there are conditions for registering for an examination, this will be apparent from the course description.

Examination regulations

- The evaluation form for a course is specified in the programme curriculum for the individual courses
- All students are automatically enrolled in the examinations for the courses they follow
- It is not possible to deregister from an examination. If the student does not attend the examination,
 - it counts as an attempt
- Failure to submit a basis for oral exam or for assessment of subjects without examination, as stated in the curriculum, means that the student cannot attend the examination. Consequently, it counts as an attempt
- Failure to submit a basis required according to the curriculum (compulsory tests, assignments, presentation or the like) means that the student cannot attend the examination. Consequently, this counts as an attempt
- Elective courses studied at other programmes must always be assessed before credits can be issued

External and internal examinations

Examinations are either with one or more internal examiners, or one or more internal examiners and an external examiner.

For examinations with internal examiners, the examiner or examiners are appointed by the institution (usually among the teachers at VIA). For external examinations, the Ministry of Education appoints the examiner.

A course is assessed either with or without external censorship. As a whole, at least 1/3 of the degree programme must be documented by external examinations.

Assessment and requirements for passing an examination

A distinction is made between the following types of assessment:

1. Grading. The 7-step scale is used
2. Pass / fail

Generally, each course is passed individually. Courses in which the grade 02 or above on the 7-step scale has been obtained, cannot be taken again.

Special examination conditions

If a student has language difficulties or disabilities, it is possible to apply for special examination conditions or an extended examination time.

If there are language difficulties, due to the student having a mother tongue other than Danish, the general practice is that extended examination time is granted only within the first 1½ academic year. Should language difficulties be due to dyslexia, the student must be tested for this. The study counsellor may be contacted on this.

An application for special examination conditions or extended examination time must be forwarded to the study administration who will assess the application. Deadlines for application are 1st December for win-

ter examinations and 1st May for summer examinations. The application is granted if it is deemed necessary to equate the student with the other examinees. However, it is a precondition that the granted special conditions do not change the level of the examination.

Illness

If a student becomes ill on the day of the exam, the student shall immediately inform the study administration.

If the student becomes ill during an oral exam, the student must report this to the lecturer.

In case of illness during a written examination, the student must summon the invigilator, who notes that the exam is interrupted due to illness.

The student must as far as possible seek medical advice on the examination day and provide evidence of the illness. The

documentation must be forwarded to the study administration no later than 4 workdays after the examination date. The student must cover any costs associated with the documentation.

If the student is unable to prove that he / she was ill, it will count as an attempt.

If the student is exposed to a violent incident that prevents participation in an exam, the student must report this to the study administration as soon as possible. In collaboration with the lecturer, the student counsellor or the head of programme, the study administration may consider whether the event is comparable to the rules for illness. If this is the outcome, the examination attempt will be cancelled.

9.2 Self-study, re-examination options and deadlines

Self-study

Courses or projects not passed by examination or other form for tests may be re-read by self-study. The student cannot follow the course again unless permission on grounds of special circumstances is obtained from the head of programme. Application is forwarded via the study counsellors to the head of programme no later than one week after the failed examination attempt.

Re-examination

As a general rule re-examinations, make-up examinations or re-testing are held approximately 2-3 weeks after the new semester has started or in connection with the following ordinary examination period.

For students who have attended a course for the first time and failed the examination:

If a course or project is only offered once a year, re-examination or re-testing is conducted either in the next ordinary exam period or as a general rule approximately 2 weeks after the following semester has started.

Examination in the bachelor project must be the last exam on the programme. Any re-examinations must be held and passed before the bachelor examination.

In case of failing an examination, the student is automatically enrolled in the next re-examination.

A student can only attempt an examination in the same course or project three times. These three examination attempts must follow immediately after each other, i.e. examinations offered in three consecutive semesters. In exceptional circumstances VIA may authorize a fourth and possibly a fifth attempt and the student must apply for an exemption from the rule.

A re-examination in a course where a written exam is normally held, may be taken as an oral exam.

Time limits

The programme must be passed within the number of years that corresponds to the prescribed study period plus two years. If the time limit is not observed, the student will be withdrawn from the programme.

Prior to the end of the student's first 2 years of study, the courses of semesters 1 and 2 must be passed •

In exceptional circumstances and upon application of exemption from the rule, the head of programme may dispense with the above.

Study admission test

All new students admitted to 1st semester must participate in and pass a written study admission test to continue their studies. The test takes place no later than 4 weeks after the start of the semester.

The study admission test is an attendance test based on questions relevant to your study programme. The study admission test is assessed internally, and is graded with “passed” or “not passed”.

If the study admission test is not approved, a retest will be conducted no later than 14 days after the completion of the ordinary study admission test. No further tests are given. If the study admission retest is graded “not approved” the student will automatically be withdrawn from the study programme.

This study admission test is not covered by the rules for complaints about tests.

Upon an application from exemption from the rule the time limits for the study admission test may be granted, provided the exemption is based on illness or unusual circumstances.

9.3 Cheating and disturbing behaviour at examinations

By cheating at an examination, the following actions by an examinee is understood

- The student obtains illicit help, or
- The student provides another examinee with answers to the test, or
- The student uses unauthorized aids.

When completing a written test, the examinee must confirm with a signature that the assignment has been completed without use of illicit aid. The signature may be digital.

Particularly about plagiarism at an examination

Plagiarism is considered to be *cheating* if it is found in a written assignment that the student has submitted for use during an examination and includes the following situations:

- A written product submitted for assessment or which has been assessed, i.e. a bachelor project
- A written product which either will be or has been part of an examination basis for an oral examination, i.e. written assignment which is submitted as a prerequisite for admission and participation in an examination
- A written product, which has been submitted as a prerequisite for admission and participation in an examination.

When is plagiarism present?

There is plagiarism present when a student in a written assignment attempts to give the impression that he or she is the author of an idea, text, setup or similar, even though the author is actually another. Plagiarism is especially evident if a written assignment appears in whole or in part as produced by the student himself or themselves, even if the assignment

1. Includes identical or almost identical representation of other people's formulations or works, with-

out the reproduced being marked with quotes, italics, indentation or other distinctive markings, including the source, including, if applicable, page number or the like (copy). In accordance with the programme's executive order for the preparation of written assignments, sometimes called editorial guide- lines.

2. Includes larger passages with a word choice that is so close to another work or similar formulations etc., that by comparison you can see that the text could not be written without using the other work (paraphrasing, etc.),
3. Includes the use of other people's words or ideas, without these persons being appropriately credited (other plagiarism), or
4. Recycles text and / or key ideas from their own previously assessed or published work without observing the above provisions in Nos. 1 and 3.

Particularly about disruptive behaviour during examinations

VIA has the right to dismiss an examinee from an examination if the student exhibits disruptive behaviour,

i.e. if the examinee exhibits noisy behaviour or violates VIA's rules of conduct during the examination. In less serious cases, the programme may issue a warning first. The examiner reports the incident to the head of programme.

Procedures and sanctions for cheating and disturbing behaviour

Anyone¹ who suspects cheating at an examination, is obliged to follow up on the suspicion and - if presumption is maintained - to report the matter to the head of programme.

If the presumption of cheating is strengthened, the examiner and / or lecturer must report the matter in writing to the relevant head of programme. At the same time, the examiner and / or examining lecturer informs the student that the case has been reported to the head of programme. If no assessment has been issued at the time of reporting the incident, no assessment is made and "Not submitted" is noted in the grading list.

When the head of programme receives a report on cheating at an examination, he / she must decide either to reject the case or to continue the administrative procedure.

Should the head of programme decide to continue the administrative procedure, he/she arranges to access any missing documentation as well as convene the student for a conversation where he/she has the opportunity to respond to the report.

The call for the meeting shall be accompanied by a copy of the report and shall include the information that the conversation relates to a suspicion of cheating at an examination and that the student is entitled to bring a representative to the conversation. The representative can advise the student during the conversation but may not participate in the conversation. If it is not possible to arrange a conversation, written communication may be used instead.

¹ In this context, everyone constitutes the study administration, including examiners, supervisor / examining lecturer, other lecturers, management, librarian and fellow students.

If the head of programme rejects the case, assessment is carried out in the normal way, provided assessment has not already been made.

Sanctions

Based on the report and the conversation, the head of programme will decide whether it is a matter of cheating and consequently, what kind of sanction is relevant to the student. The head of programme can make a decision on sanction only if he is convinced that the evidence on cheating is beyond reasonable doubt.

The matter is reported to the Director of VIA Engineering, if, and only if the case is so serious, that it is

considered to lead to expulsion from the programme. In all other cases, the head of programme will decide on the matter.

The final decision is communicated to the student in writing, with a copy to the person reporting the case and the student counsellor; also, it is included in the student's study folder.

Forms of sanctions

Should evidence of cheating at an examination be found, one or more of the following sanctions will apply:

Warning

A written or oral warning against violations of the rules is issued.

Expulsion from a written examination taking place at VIA if the rules of examination are violated. Consequently, the student is registered as absent from the examination in question. Expulsion from an examination always takes place if plagiarism is discovered, unless the plagiarism does not affect the assessment.

Annulment of a written assignment

The annulment comprises the written assignment relevant in the suspicion of cheating. Annulment may occur, regardless whether an assessment has been issued. The student is registered for using one examination attempt. Repeated drafting of an assignment using illicit help or unauthorized aid will result in permanent expulsion from the relevant programme. Expulsion is the same as cancellation of the examination attempt.

The provision also applies to assignments that form the basis for an assessment of courses without examination.

Temporary or permanent expulsion from the programme

If the incident is a case of serious or repeated cheating, the student will be expelled or suspended from the educational institution. The expulsion means that the student is excluded from participating in all activities at VIA, including all participation in classes and exams. The suspension entails that the student is excluded from participating in all activities at VIA, including all participation in classes and exams in the suspension period.

In the case of suspension the student is registered as being on leave of absence during the period in question. After the suspension period, the student is automatically readmitted as a student at VIA at the study programme.

Apart from the above-mentioned penalties, the incident may be reported to the police if it concerns civil law.

9.4 Examination complaints

A complaint can be put forward on one of the following conditions:

- The examination basis, including examination questions, assignment and relation to the objectives and requirements of the programme
- The test sequence
- The assessment

The complaint must be in writing, well founded and submitted by the individual student no later than 2 weeks after the student has been informed of the assessment of the examination according to standard procedure.

The complaint is forwarded to the head of programme, who will then address and assess the complaint.

Upon request, the student is entitled to receive a copy of the assignment and a copy of the corresponding report, in the case of a written exam.

As a starting point, the head of programme presents the complaint to the original assessors, i.e. examining lecturer and examiner. The assessors have 2 weeks to give a professional opinion to the complainant's questions. The complainant must have the opportunity to comment on these opinions and has a deadline of 1 week to comment.

The head of programme will decide on the case, based on the opinions and comments. The decision must be in writing, be well founded, and have one of the following outcomes:

- Offer for new assessment (reassessment), this applies only for written tests
- Offer for a new examination (re-examination), or
- The student's contention is not upheld

A decision on a complaint about a test can only result in the student failing to comply with the complaint if the assessors agree on this.

Only when the assessors agree, the head of programme can decide that the student's contention is not upheld.

As soon as a decision is made, the student and the assessors must be notified. If the decision results in a new assessment or a new examination, the student should be informed that this might result in a lower grade.

In case of new assessment or new examination

An offer for new assessment or new examination must be accepted no later than 2 weeks after notification of the decision has been made. It is not possible to undo an acceptance. If the student does not accept an offer before the expiry of the deadline, no new assessment or new examination will be conducted.

A new grading or a new examination must take place as soon as possible. If a diploma has been issued, the programme must withdraw the diploma until the assessment is available and, if necessary, issue a new diploma.

New assessors will be appointed in case of new assessments and new examinations.

If it is decided to arrange a new assessment or a new examination, the decision applies to all examinees if the examination suffers from the same defect as the one complained about.

Especially about new ruling

In the event of a new assessment, the assessors must have these files submitted: The assignment, the corresponding report, the complaint, the statements of the original assessors, the student's comments, as well as the decision of the head of programme and the appeal board respectively. The assessors inform the programme of the result of the new assessment, accompanied by a written justification for the assessment. The programme informs the student of the assessment and the reasons for the assessment.

Appeal to a ruling

If the student disagrees with the professional decision of the programme, this may be appealed within 2 weeks after the complainant has been notified of the decision. The appeal must be in writing, well founded, and sent to the head of programme, who will then establish an appeal board.

About Appeal Boards

The head of programme establishes an appeal board as soon as possible after receiving an appeal.

Permanent Appeal Boards may be appointed. The education institution is responsible for the costs of the appeal board. The board consists of two appointed examiners, a lecturer authorized for examinations

and a student in the field of the programme.

About the selection:

- The chairperson of the Corps of Examiners appoints the two examiners. The chairperson of the Corps of Examiners appoints one of the examiners to chair the appeal board. The chairperson of the Corps of Examiners may appoint himself as an examiner or chairperson.
- The educational institution appoints the lecturer authorized for examinations and the student.

The Public Administration Act, including legal incapacity and confidentiality issues, governs the activities of the Appeal Board.

In order for the Appeal Board to be legally competent, all members of the Board must participate in the discussion of the Board and all the case files must be forwarded to all members. The discussion may take place in writing, including electronically, if there is agreement between the board members on written processing. If the Appeal Board is unable to reach an agreement, the discussion will end at a meeting in which all members of the Board shall be present. If the discussion is closed by voting and there is a tie, the chairperson's vote is decisive. If the Appeal Board becomes aware of errors and omissions in an examination, in connection with appeal proceedings, the educational institution will be informed accordingly and the education institution will decide on remedies in accordance with the rules in Order 1519 of 16th December 2013.

Decision by the Appeal Board

The Appeal Board shall decide on the basis of the material which form the basis of the institution's initial decision. The decision of the Appeal Board shall be in writing, well founded and may result in one of the following outcomes:

- Offer for new assessment (reassessment), this applies only for written tests
- Offer for a new examination (re-examination)
- The student's contention is not upheld

The decision of the Appeal Board shall be communicated to the head of programme as soon as possible. No later than 2 months for an examination in a winter semester, and no later than 3 months for an examination in a summer semester after the appeal has been submitted to the manager.

A new examination and a new assessment takes place according to the rules described in the section "In case of new assessment or new examination".

It is not possible to appeal the professional decision of the Appeal Board any further.

Legal issues

The student can always complain about legal issues in decisions taken in complaint and appeal cases. The complaint must be submitted no later than 2 weeks after the decision has been made known to the student. The complaint must be sent to the head of programme for the student's education. The head of programme draws up an opinion and then forwards the complaint with the opinion to the Board of Higher Education and Education.

10 Exemption options

The head of programme may dispense with the rules of this curriculum, which are determined solely by the programme, if the student can prove that there have been exceptional circumstances.

11 Enforcement and interim arrangements

This curriculum is enforced from the fall admittance of 2017.

For students, who at the time of entry into force of this curriculum were subject to a previous curriculum for the programme, apply, that they are covered by these joint rules also.

Interim arrangement for the Mechanical Engineering programme:

The structure and subjects of the programme according to previous curriculum are followed until the end of 2018. Hereafter, the students are transferred to the new curriculum from spring semester 2019 (6th semester) and the programme can only be completed according to this curriculum, comprising joint regulations and regulations for the programme.

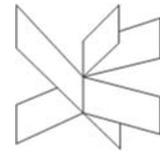
12 Validity of the curriculum

This curriculum has been prepared in accordance with:

- Executive Order no. 1160 of 7th September 2016 on Bachelor Programme in Engineering (Bekendtgørelse om diplomingeniøruddannelsen)
- Executive Order no. 15 of 9th January 2020 on Business Academy- and Bachelor Programmes (Bekendtgørelse om erhvervsakademiuddannelser og professionsbacheloruddannelser)
- Executive Order no. 152 of 26^h February 2020 on admission to Business Academy- and bachelor programmes (Bekendtgørelse om adgang til erhvervsakademiuddannelser og professionsbacheloruddannelser)
- Executive Order no. 18 of 9th January 2020 on tests in professionally-oriented programmes (Bekendtgørelse om prøver i erhvervsrettede videregående uddannelser)
- Executive Order no. 114 of 3 February 2015 on the Grading Scale and Other Forms of Assessment (Bekendtgørelse om karakterskala og anden bedømmelse)

In case of discrepancies between the executive orders in force at any time and this curriculum, the executive

13 Appendix 1: VIA Engineering Guidelines - Projects

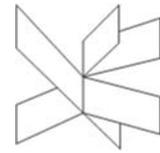


SEMESTER & BACHELOR PROJECTS

VIA ENGINEERING GUIDELINES

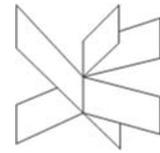


Version: August 2018
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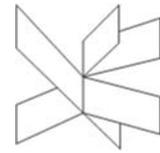
APPENDICES

Appendix 1. Project Description – VIA Engineering Guidelines

Appendix 2. Process Report – VIA Engineering Guidelines

Appendix 3. Project Report – VIA Engineering Guidelines

Appendix 4. Supervision – VIA Engineering Guidelines



1 Introduction

Project work plays a central role in all engineering disciplines at VIA Engineering. The students must carry out semester projects as well as a final bachelor project. If the one-semester internship (which is closely related to project work) is included, about 48 % of all the ECTS points in a degree at VIA University College are project related.

1.1 The system of project guidelines

This main document belongs to a set of documents (see Figure 1) which describe how semester projects and bachelor projects are to be carried out in VIA Engineering. The document “Semester & Bachelor Projects – VIA Engineering Guidelines” may be considered the master document and is analogous to the trunk of a Christmas tree. Details regarding requirements and recommendations for specific parts of project work (such as writing a project report) are given in the Appendices and are analogous to the branches on a Christmas tree. The number of Appendices is not static, but may increase as more are prepared. These documents are common to all of VIA Engineering. In the analogy, VIA Engineering has one common Christmas tree.

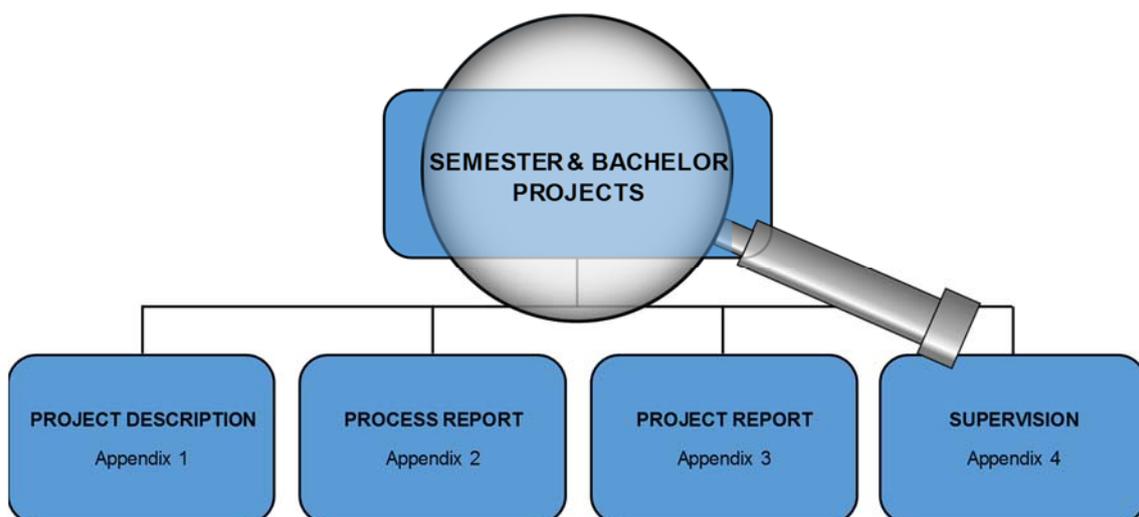
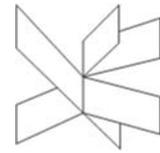


Figure 1. Structure of VIA Engineering Guidelines for semester and bachelor projects.



In addition to the trunk and branches, however, there may be unique requirements and recommendations for each Engineering discipline. These are analogous to the decorations on the Christmas tree. All VIA Engineering project work is based on the same tree, but the decorations are unique. For example, Mechanical Engineering may require a product specification to be included in the Project Report while Global Business Engineering may require preparation of a business case.

This set of guidelines is initially introduced to the student during the first semester course “Study Skills For Engineering Students (SSE)”. The guidelines are subsequently put to use during semester projects and the bachelor project.

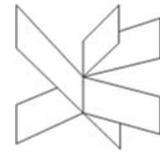
1.2 Purpose of project guidelines

These guidelines describe the framework for project work across all VIA Engineering disciplines by giving common, general guidelines for how projects are to be carried out. The primary target groups for the guidelines are VIA Engineering students and their supervisors, thereby providing a common reference for all involved parties.

The main purposes of these guidelines are:

1. To promote high quality learning experiences for the student that are relevant for the workplace through focussing on central aspects of project work.
2. To harmonize the approach to projects across the VIA Engineering departments, leading to increased transparency, paving the way for the formation of interdisciplinary project groups, and promoting mutual inspiration between supervisors.

These guidelines are broad in scope to accommodate the diversity of topics and process methods that are utilized in the different VIA Engineering disciplines. The guidelines attempt to provide inspiration and understanding by striking a balance between being too restrictive (resulting in the inhibiting of the creative expression of student and supervisor alike) and being too loose (resulting in academic rhetoric that provides no helpful structure at all).



1.3 Project phases

In practice, the course of a project can be divided into four phases: 1) Project Initiation, 2) Project Definition, 3) Project Execution and 4) Project Evaluation. Each phase can be subdivided into activities that often must be carried out in a specific order. At certain points in the project, the student must have approval of the supervisor to continue to the next phase. Figure 2 shows a flow diagram of the phases of a VIA Engineering project, including the necessary approvals. Further details about these phases are given in Chapter 2 to Chapter 5.

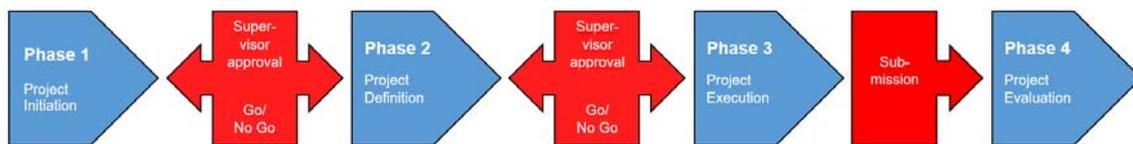


Figure 2 Flow diagram of the phases and approvals of a VIA Engineering project.

1.4 Important characteristics of VIA Engineering projects

This section identifies and describes some important characteristics of VIA Engineering projects.

1.4.1 The dual purpose of VIA Engineering projects

VIA Engineering emphasizes a dual purpose of project work, see Figure 3. Here, the two purposes are labelled “the product” and “the process” and may be considered distinct from one another (Dahl, et al., 2012). In VIA Engineering, a balance between these purposes is intended, indicating that the product and the process are both important.

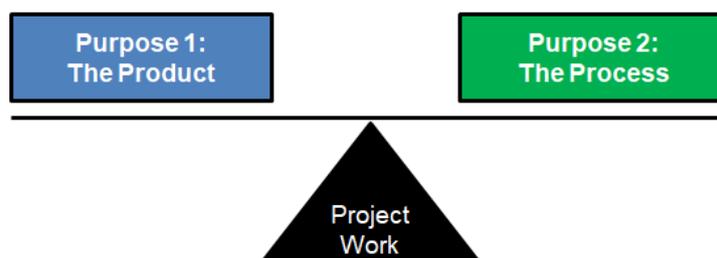
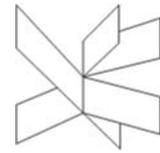


Figure 3 The two purposes of projects in VIA Engineering are both important.



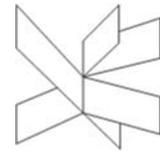
The product: One purpose of project work at VIA Engineering is to bring about some sort of “product”. This product may take on many forms, such as a tangible device, a piece of software, a method, a strategy, a design, or an optimization. To make a product, the student must become proficient at carrying out technical, engineering work. The knowledge, skills and competences that are relevant in this work depend highly on the engineering field being pursued. Details related to the technical side of the product are documented in the so-called “Project Report”.

The process: This second purpose is to ensure that the student becomes proficient at problem-based work processes in a group setting. This competence is highly valued in the work place. In general, the desired process competencies are common for all engineering disciplines. Subjects include problem solving, planning, cooperation in groups and communication. Different tools to support the process may be used depending on the engineering discipline in question. This second purpose is documented in the so-called “Process Report”.

1.4.2 Student-centered learning

Student-centered learning is a method of learning that shifts focus from the teacher to the student (Weimer, 2002). It encourages active learning by placing the responsibility for selecting what to learn and how to learn in the student’s own hands. This develops independent problem-solving abilities, an important skill in the workplace. Student-centered learning is largely based on the constructivism learning theory (Cooper, 1993). This theory states that students construct their own understanding through a process of discovery in which they reflect on personal experiences and relate new knowledge with what they already know.

Projects in general are well-suited to student-centered learning because the majority of the work is actively carried out by the student rather than being served in the form of lectures by a teacher and being received passively by the student. VIA Engineering utilizes student-centered learning for all of its student projects. This is especially apparent in projects in which the student chooses the topic (see section 2.2) and writes the project



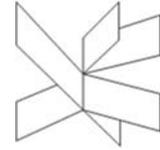
statement (see section **Fejl! Henvisningskilde ikke fundet.**). It also means that the supervisor has the role of a facilitator/mentor, who monitors the project and suggests tools and challenges rather than the role of a traditional teacher, who provides solutions (see chapter 0). Detailed information about the supervisor's role in VIA Engineering projects is found in Appendix 4.

1.4.3 Problem-based learning

Problem-based learning means that the project work is guided by the demands of the problem rather than by a pre-determined curriculum prepared by the supervisor. Problem-oriented projects are carried out in small groups of students who make inquiries into real-world problems (Pecore, 2015). The purpose of problem-oriented projects is to achieve learning not only about the technical subject, but also about the process of solving challenges. Both of these skills are important for the workplace.

VIA Engineering endeavours to provide problem-based learning experiences for the students. The issue that needs addressing is raised by the students in a problem statement. The students also plan how to approach the solution. In effect, this means that the students are responsible for developing their own curriculum.

Challenges with problem-based learning include that the teacher must relinquish control, that the solution to the project is not given ahead of time and that problem-oriented projects run the risk of failing. To meet these challenges, some projects may be partially curriculum-based, meaning that certain standard elements are required to be included. The ratio between activities stemming from the real-world problem and those stemming from a pre-determined curriculum may increase from semester to semester in an intentional progression.



2 Project Initiation

A project is initiated by forming a group and by selecting a topic. The order of group formation and topic selection may vary: A group may be formed and then the topic decided upon or vice-versa. Or, the two may take place more or less simultaneously.

Once the group is formed and the topic is selected, the group must prepare a statement to this effect (see the Group Formation and Topic Selection Template) and it must be turned in to the supervisor for approval. The supervisor decides if the group and the topic are acceptable for continued work or whether modifications are in order. This statement is the first document to be prepared by the newly-formed project group.

Below, group formation and topic selection are described in more detail.

2.1 Group formation

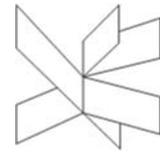
Group collaboration is a valuable competence for any person. It is an advantage to consciously train this competence rather than just trying to adsorb it in practice. The engineering student needs to become proficient in group collaboration for a number of reasons including:

- Group collaboration is an important element at most work places.
- Authentic work place problems today are often too complex to be solved alone.
- The social life of a student requires these competencies.

The recommended size for groups in VIA Engineering is: 3-6. If it makes sense for the project, it is possible to compose a group with members from different fields of VIA Engineering.

Obviously, a prerequisite for group collaboration is the formation of a group. This formation, however, is an activity that can be problematic. There is a risk that this process will be unpleasant or that some students will feel excluded. Therefore, the group formation process should be carefully prepared and carefully executed.

On the practical side, there are different methods available for group formation:

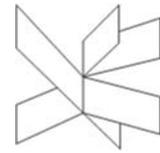


1. **Student controlled:** Group formation may be left up to the students themselves to figure out. This is often based on the students' desire to work with certain friends or to work on a specific topic.
2. **Supervisor controlled:** The supervisor may autonomously form the groups. Criteria for forming the group may include: 1) random assignment, 2) assignment that ensures a mix of strengths and weaknesses, 3) assignment to ensure that students work with classmates that did not work together in previous semesters, and 4) assignment that ensures diversity in personality types based on a personality test.
3. **Combined:** A combination of group formation method may be used in which students form the groups themselves while adhering to a quota system. Quotas may be set up to ensure diversity in the students' mother tongues, similarity in grade ambition, similarity in topic interests, inclusion of both sexes, etc.

Progression from semester to semester may be practiced in group formation, such that supervisor controlled formation is used the first semester and student controlled or combined formation is used in later semesters.

For student-controlled group formation, a number of guiding principles may be articulated by the project supervisor before the group formation activity begins. These include:

- All students share the responsibility that everyone ends up being satisfied with their group placement.
- No group may decide to exclude a specific student from a group.
- Members of groups are not finalized until all students are placed.
- If group formation becomes deadlocked, it is the supervisor's responsibility to step in.
- As a final resort for a group failing to function, the group may be disbanded during a trial period of approximately six weeks and reorganized.

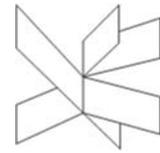


2.2 Topic selection

As with the group formation activity described above, the topic selection activity can exhibit a progression from semester to semester, starting with supervisor controlled (to ensure that important subjects are covered during the engineering degree programme or that the supervisor is competent in the topic) and ending with completely free student controlled selection for the bachelor project.

Not all topics are suited for project work. Criteria for good topics for a VIA Engineering project include the following:

- **Student interest:** Since interest is a powerful intrinsic motivator, it is important that the student is interested in the topic.
- **Relevant for the semester:** Topics which are closely related to other semester courses are to be preferred.
- **Engineering depth:** The topic should be sufficiently complex and interdisciplinary as well as being accessible to investigation.
- **Authentic:** The topic should be relevant for society outside of the engineering school and therefore be a real-world topic.
- **Exemplary:** Learning outcome from project work should be transferable to other topics.
- **Realistic:** Considering time and financial constraints, the topic must be realistic.



3 Project Definition

After the project is initiated through the formation of a group and selection of topic, the newly-formed project group must define the project and the process. This phase of the work includes the following steps:

1. Group contract (template available)
2. Problem analysis
3. Project description (Appendix 1)

These steps are essential for the subsequent execution of the project and are described in the following sections.

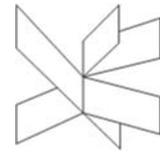
3.1 Group Contract

Preparation of a Group Contract provides an opportunity to discuss the ground rules of the coming collaboration. The purpose of the Group Contract is to accelerate and improve the group's development and function. Information in Danish can be found in (Kaae, 2015).

Each project group must prepare and sign a Group Contract to their supervisor. The Group Contract is to be included as an attachment in the Project Description, see below. The supervisor must either approve the Project Description/Group Contract or request modifications for the group before continuing to the next phase of the project work (Figure 2).

3.2 Problem Analysis

In this stage, a preliminary analysis of the problem is carried out. This analysis will vary depending on the problem. The Problem Analysis often includes a literature survey. In addition, the Problem Analysis may include an analysis of needs, stakeholders, surroundings, resources, etc. More information is found in Appendix 1.



3.3 Project Description

The Project Description is a document that describes what is to be achieved during the project and how it is to be achieved. The project group must turn in a draft of the Project Description to the supervisor consisting of about 8-10 pages. The student is entitled to receive feedback from the supervisor. On the basis of the feedback, the draft is then revised. A minimum of one revision is required, see Figure 2. A number of revisions, however, may be necessary. The Project Description document must be approved by the supervisor before the project group moves on to Project Execution.

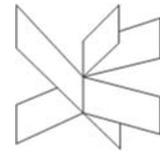
The Project Description is composed of the following eight items:

- Background description
- Definition of Purpose
- Problem Statement
- Delimitation
- Choice of models and methods
- Time schedule
- Risk assessment
- Sources of information

In addition, the Project Description may include several appendices, e.g. the Group Contract. Detailed requirements for the Project Description are in Appendix 1.

One of the most important parts of the Problem Description is the Problem Statement. A problem statement is a concise portion of prose that raises an issue that needs addressing. A good problem statement sets the stage for and guides a subsequent investigation.

The Problem Statement is the focal point for the execution of the project. Einstein once wrote “The formulation of a problem is often more essential than its solution.”



4 Project Execution

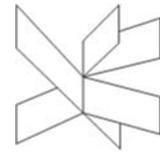
This phase represents the bulk of the project work. Here, data is collected, investigations are made, tangible and intangible products are developed, and documentation is carried out.

Group discussions are carried out and revisions of the Group Contract or Problem Statement are made, if necessary.

Meetings are held within the group to check the progression of the project and to help drive the project forward. It is recommended that meeting roles are divided up between the group members prior to each meeting (Kaae, 2015). In this way, each group member has the opportunity to play the role of chairperson, minute taker and evaluation leader, thereby practicing a variety of meeting skills. Group meetings may also be used to arrange meetings with the supervisor. More information about meetings with the supervisor are found in Appendix 4.

Group work in the project is developed so that true cooperation is used rather than working in silos. Any conflicts that arise are handled.

The project execution phase is complete when the Project Report and the Process Report are complete. If desired, drafts of these reports may be discussed at meetings with the supervisor prior to the deadline. However, the supervisor is not responsible for reading and commenting full drafts and the responsibility for the preparation of these reports rests solely on the project group.



5 Project Evaluation

Following Project Execution, the project enters the Project Evaluation phase (Figure 2).

5.1 Dual purpose of examinations

In VIA Engineering, project examinations have two purposes: evaluation and learning (Skov, 2013).

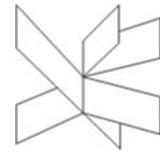
The first purpose is described in the examination regulations (Uddannelses og Forskningsministeriet, 2016). It is stated here that the purpose of an examination at universities is generally to evaluate to which degree the student fulfils the professional goals determined for the subjects in the curriculum. This traditional definition focusses on ensuring a valid evaluation that maintains the student's legal certainty. The purpose can be difficult, as learning objectives are often very complex. Learning objectives for projects often contain skills and competence goals that are more difficult to evaluate than knowledge goals. To be fair, the form of the examination should be suitable for the learning objectives. Multiple choice, for example, is seldom the best choice to evaluate a competence goal related to group cooperation.

The second goal of a project examination is to support the student's learning. At this point in time, the students are at the peak of their understanding of the project. In addition, the pressure of the examination situation also calls for a student to be exceptionally alert and perceptive. These factors put the student in a unique situation to gain new insights.

5.2 Project examination procedure

Project examinations are carried out as oral examinations. In principle, they are open to the public (Uddannelses og Forskningsministeriet, 2016), making it possible for peers to attend. One or more internal examiners from VIA will always be present. Typically, this is the project supervisors and possibly a teacher from one of the semester courses. In addition, an external examiner may be present.

Normally the procedure for a VIA project examinations includes two major parts:



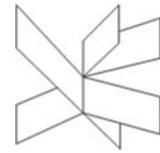
- 1) an oral presentation by the group (approximately 5 minutes times the number of students in the group)
- 2) a question and answer period (approximately 20 minutes per student).

The question and answer period is often carried out with each student individually, while the other members of the group wait outside of the room. To increase the learning aspect of the project examination, however, the question and answer period may alternatively be carried out as a group examination. .

3. In this extended session, the students are present as a group And questions are directed either to the entire group (hands must be raised before answering) or to a specific group member to ensure that all group members can be evaluated. The longer time in which each student is present allows the examiners to reach greater detail, and to observe responses even when another student is answering. The students learn from this extended examination time included peer-learning from how fellow students answer questions.
4. After the question and answer period, the normal procedure is for the students to leave the room while the supervisor and external examiner decide on the individual grades for each student. The students are then given their grades. This is normally done with all students present, but can be individually if one or more students is uncomfortable with this method. Finally, feedback/feed forward on the project is given in plenum.

5.3 Grading

Grading of a project is based on a holistic assessment that includes the Process Report, the Project Report, the oral presentation and the question-and-answer session. There is a progression through the semesters, with the Process Report having a greater weight for the first semester project and the Project Report having a greater weight in the seventh semester.



6 Project supervision

Project supervision is carried out by a teacher with the purpose to support the group, but not to take over responsibility for the project. Supervision includes both product supervision and process supervision.

Supervision is carried out at various phases of the project work:

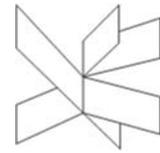
Project Initiation: The project supervisor is responsible for determining the rules for group formation and topic selection. Generally, the supervisor is present during the group formation process. Finally, the supervisor must approve the Group Formation and Topic Selection document or request changes.

Project Description: The supervisor must give feedback to the project group regarding the draft Project Description document (which includes the Group Contract as an Appendix), with special focus on the Problem Description. The supervisor must also approve the final Project Description or explain why approval was not possible.

Project Execution: Supervision meetings are recommended to be held once per week with a duration of approximately 30 minutes. This frequency may increase during critical periods of the project and decrease when needs are less pronounced. The order of business for supervision meetings should include both process and product subjects. The project group is responsible for inviting the supervisor to the meetings, providing a written agenda with the invitation, and preparing written minutes after each meeting. This information may be included in the project groups' Process Report.

Project Evaluation: When the Process Report and the Project Report are submitted, the supervisor is responsible for reading these reports in preparation for the examination. The supervisor must also prepare for the Question and Answer period for the examination. Finally, the supervisor in collaboration with the external examiner is responsible for giving the students individual grades for the project work.

More information about supervision is given in Appendix 4.



7 Deliverables, deadlines and submission

This chapter defines the project's deliverables, deadlines and methods of submission. Templates are available for each of the deliverables. Table 1 provides an overview:

Deliverable	Deadline ¹	Method of submission	More information
Group formation & Topic Selection	Semester week 3	ItsLearning or e-mail	none
Project Description (incl. Group Contract)	Semester week 8 (Before Easter/ Autumn break)	ItsLearning or e-mail	Appendix 1
Process Report	Semester week 15	WiseFlow	Appendix 2
Project Report	Semester week 15	WiseFlow	Appendix 3

Table 1. Overview of VIA Engineering project deliverables, deadlines and method of submission.

¹Exchange, bachelor and first semester projects may require different deadlines.

7.1 Deliverables

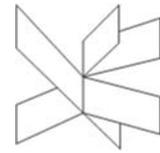
In connection with a VIA Engineering project, a deliverable is a document or other product that is to be turned in. There are four deliverables in a VIA Engineering project; the Group Formation and Topic Selection document, the Project Description (including the Group Contract), the Process Report and the Project Report.

7.2 Deadlines

In the interests of harmonizing the various fields of engineering (to pave the way for cooperation between students and supervisors), two deadlines are common to all of VIA Engineering.

First deadline: The Group Formation and Topic Selection document must be turned in by the end of semester week 3.

Second deadline: The final draft of the Project Description (including the Group Contract as an attachment) must be turned in by 1st of October for the fall semester and the 20th



of March for the spring semester. These deadlines are normally about 5½ weeks into the semester. In order to allow for at least one revision of the Project Description, a draft must therefore be turned in and commented by the supervisor prior to these dates.

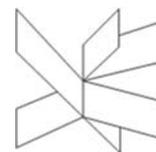
Third deadline: The final Process Report and final Project Report must be turned in by the end of the project period but before the beginning of the examination period. This deadline usually falls just before Christmas (fall semester) and at the beginning of June (spring semester).

7.3 Submission of deliverables

The method for submitting the documents Group Formation and Topic Selection, Project Description and Group Contract is decided on by the supervisor. Typically, this will be on ItsLearning, although other methods may be used.

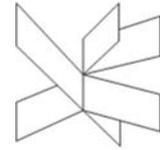
The Process Report and Project Reports must be uploaded on WiseFlow. The Process Report is comprised of a single pdf file.

The Project Report is comprised of two separate files. The first file consists of everything except the appendices and is uploaded in pdf format. The second file consists of an assembly of the appendices. In many cases, this file may be a single pdf file. In some cases, the appendices include files in specific software. These may be assembled in zip-format. If there are questions about submission format, the project group should check with the project supervisor.



8 References

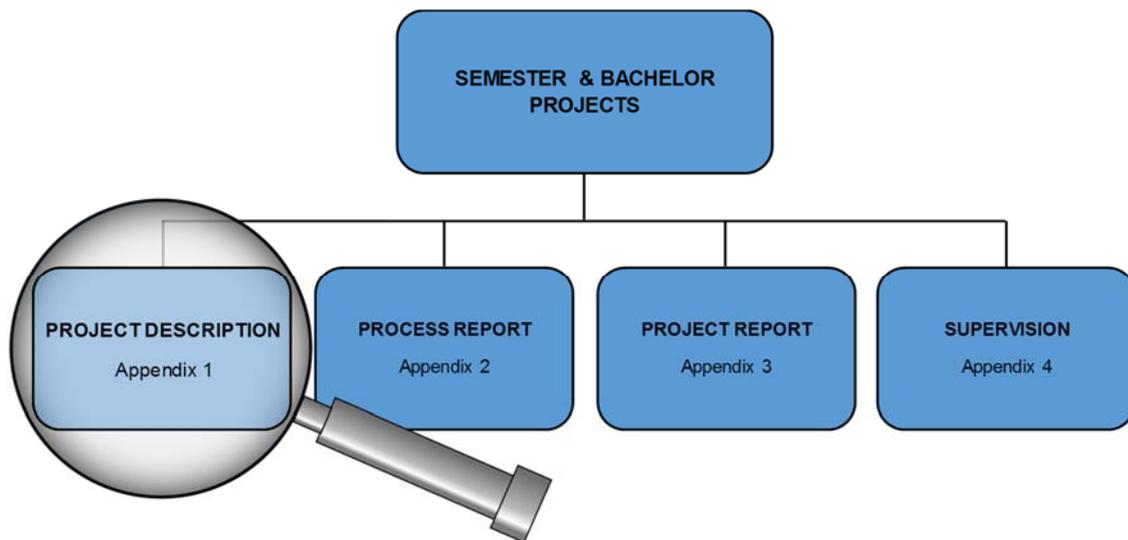
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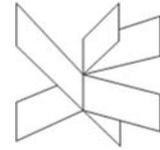
APPENDIX 1

Project Description

VIA ENGINEERING GUIDELINES

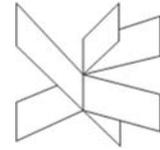


Version: August 2018
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1 Introduction

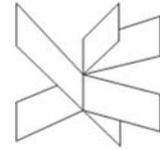
Before commencing the actual project work, a project description needs to be developed defining why the project is relevant, its purpose and output. Likewise, the Project Description contains a plan for its activities including why, what, who and when. Finally, the Project Description describes which theories and methods the project will involve.

The guidelines presented here are valid across all of VIA Engineering and describe requirements and recommendations for Project Descriptions. It should be noted that following these guidelines is necessary, but not sufficient, for a project group to receive a high grade for their work.

The Project Description belongs to a set of guidelines for project work in VIA Engineering. More information about this set of guidelines is found in the current version of the master document “Semester & Bachelor Projects – VIA Engineering Guidelines”.

An accepted Project Description is mandatory for the commencing of a project. When the Project Description has been approved and a supervisor has been appointed, the actual project work may begin. Please note that important changes of the Project Description after approval requires acceptance from the supervisor. Normally, the length of the Project Description is 8-10 pages. A Microsoft Word template for VIA Engineering Project Descriptions is available electronically for use by the project group, but use of this template is not required.

A Problem Analysis is a prerequisite for the formulation of the Project Description, but is not part of the actual Project Description itself. Depending on the scope of the project, this process may be more or less comprehensive. In the problem analysis phase, an investigation of issues relevant for the project is made including the necessary collection of data to back this up, e.g. identification of the overall problem, establishment of causes and effects, identification of stakeholders, etc.



2 Text

Many rules and recommendations are universal for all types of writing, including correct grammar, correct spelling, and identifying the target audience. In addition to these universal aspects, the Project Description, which is technical writing, has a number of specific conventions which contrast with many other types of writing.

2.1 Universal language elements

There are a great many universal elements for creating good technical writing. One of the universal elements which are often problematic is:

- **Target audience:** The target audience of the Project Description is the group itself and the supervisor. Thus, the authors should assume that the target audience is intelligent and has a basic understanding of the field in question.

2.2 Language conventions

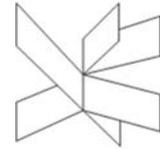
Formal language is associated with particular choices in grammar and vocabulary. In technical writing, formal language is used by convention. These conventions include the avoidance of:

- **Contractions:** Omission of letters in a word or words, i.e. “isn’t”
- **Colloquial:** Casual and conversational language, i.e. “buzz off” or “go bananas”
- **Slang:** Non-standard words that imply familiarity, lower dignity, etc., i.e. “my bad”

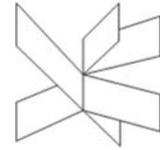
In addition, technical language is concise. This means that the writing should be brief in form, but comprehensive in scope, giving a lot of information, but with only a few words. All unnecessary sentences should be excluded.

Technical writing intentionally creates a distance between the author and the subject matter to emphasize objectivity. This is supported by avoiding the following:

- **Use of first person:** Use of first person (I, me, we, us) should be avoided in project reports. This is done intentionally to focus on the subject matter.



- **Emotive language:** Emotive language arouses feelings. It is therefore subjective rather than neutral. To promote objectivity, emotive language must be avoided.
- **Unsupported arguments:** Technical writing uses supported arguments. This means that information is referenced to other work. In addition, personal opinions are avoided.



3 Visuals (figures and tables)

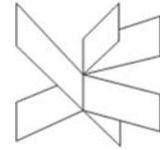
Visuals (such as sketches, graphs, diagrams, figures and tables) should be used when they assist the reader in understanding the report more clearly. Visuals should be tailored to emphasize the writer's point. If the point is to compare two sets of data, for example, both sets should be included in one graph rather than two separate graphs.

All visuals must be numbered (the word processor can keep track of this automatically) and include a text description. ALL visuals must be referred to in the text.

If relevant, visuals should include the following:

- A legend to explain symbols
- Scale, north arrow and publisher for maps
- Labelled axes for graphs

In some cases, visuals included in a project report are captured in pixel format in low resolution. This is especially a problem when a small visual is enlarged. Adequate resolution should be ensured.



4 Project Description Structure

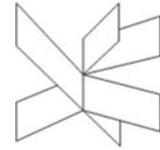
The Project Description is the foundation of the project work, defining the initial whys, whats and hows, stating with what is to be achieved and how to achieve it. The Project Description consists of three parts:

1. **Front matter:** Meta-data as report cover, title page, etc.
2. **Main matter:** The report from background description and problem statement to time schedule.
3. **Back matter:** Supplemental matter in support of the main matter including Appendices.

4.1 Front matter

The front matter of a Project Description may include the following elements:

- **Header and Footer:** The page header of the main matter of the project description must include the title of the report, while the page footer of the main matter of the project description must include page numbers. Additional information in the header and footer may be included if desired.
- **Cover:** A report cover is optional and may be formatted as desired.
- **Title page:** The design of the title page may be determined by the project group. However, the title page must include the following elements:
 - name and logo of the educational institution
 - the title of the project
 - the name of the study programme and semester
 - the name(s) of the student(s) and student numbers
 - number of characters
 - the name of the supervisor
 - date
- **Preface:** A preface may be included if additional comments on context of the project description are needed. The project group and the supervisor should discuss the need to include a preface.



- **Table of contents:** The project report must include a table of contents which outlines the structure of the report and how the information is organized.
- **List of figures and tables:** This list must contain a full listing of all figures and tables used in the report.

4.2 Main matter

The main matter of the Project Description includes the following items:

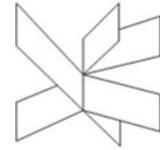
1. Background description
2. Definition of purpose
3. Problem statement
4. Delimitation
5. Choice of models and methods
6. Time schedule
7. Risk assessment
8. Sources of information

4.2.1 Background description

The background description is an overall introduction to the problem area based upon the group's analysis of the problem as well as an explanation of how the problem has arisen. Furthermore, the project group must state its reasons for choosing to work on the topic in question. Eventually, the project group may state why a company they are doing the project for wants the group to work on this specific topic in question.

4.2.2 Definition of purpose

The purpose of the project describes the overall motivation for the project (e.g., the purpose of designing a wind turbine could be to avoid CO₂ emissions). Definition of the purpose should not exceed a few lines and should be a natural continuation of the background description. Thus, a well-defined purpose can be used for judging the relevance of the outcome throughout the project.



4.2.3 Problem Statement

One of the most important parts of the Problem Description is the Problem Statement. A problem statement is a concise portion of prose that raises an issue that needs addressing. A good problem statement sets the stage for and guides a subsequent investigation. It should be brief, focused, solvable within the given timeframe and relevant for the semester topics. The Problem Statement should have sufficient engineering depth and have a taxonomy suitable for the students' level of progression. It is NOT a topic, a problem, a solution, or a goal.

The Problem Statement must consist of one - and only one - overall question. Based upon the Problem Statement, the overall requirements and criteria for the solution can be defined in the form of a requirement specification technical, economical, marketing related etc.

On basis of the above, a group of sub- problems can be defined and included. In this way, the Problem Statement defines all the (unresolved) problems that need to be addressed in order to obtain a useable solution.

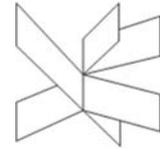
This strict hierarchical listing of the problems is mandatory in order to avoid collision between the derived sub-problems.

4.2.4 Delimitation

The delimitation specifies which of the sub-problems that the project will not cover, or alternatively, it indicates the estimates and assumptions that the project will be based on.

In any case, the delimitation criteria should be accounted for in relation to the chosen problem(s) that needs to be solved. The delimitation(s) must first and foremost be relevant and well argued.

Example: In the case of business-related problems, it has often been predetermined which market you should study and survey (geographically), and which product(s) you



should investigate on this market. In addition to these predetermined limitations, the delimitation must contain a time frame, i.e. how far back and forth in time the problem should be studied.

In the delimitation you are not allowed just to exclude all the professionally demanding parts of the problem(s). The problem statement and the delimitation must be logically linked.

4.2.5 Choice of models and methods

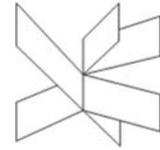
The model and method section describes how – and to which detail – the individual problems listed in the problem statement (delimitations excluded) are solved.

A description should be made on which theoretical models and methods are used when working on the project, e.g. descriptive analysis, explorative analysis, causal analysis, field or laboratory work, etc. Further, a description of why a given method is chosen with regards to the expected outcome. The choice of model and methods also includes the project’s research design, meaning that the overall strategy is explained. Choice of model and methods as well as strategy will affect the project results and findings.

The project group should also reflect upon the scientific tradition and paradigm that the project study takes its outset in. Table 1 is a useful planning tool for this purpose.

What - partial problem.	Why - study this problem – related to the purpose of the project.	Which - level of the outcome is expected.	Which - methods/ models / theories will be used.	Who - in the group is the main responsible person for this point.	What - is the estimated workload (hours)
-------------------------------	--	--	--	--	--

Table 1. Planning tool for reflection on project model and methods



The choice of models and methods may often lead to a more detailed description of to which extent an analysis will be performed. It may often be necessary to prioritize which analyses are performed in detail and which are only given few resources.

4.2.6 Time schedule

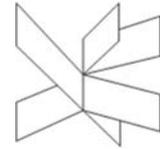
The time schedule specifies the overall timeframe of the project period and the duration of the individual tasks and their interdependence. The time schedule must be visualized in a Gantt chart stating activities and milestones followed by small textual descriptions of the most important tasks. It is important to understand, that the time schedule is regarded as a planning tool, likely to change. However, a thorough planning of the Project Execution regarding choice of models and methods as well as time schedule is essential for submitting a high quality Project Report in time.

4.2.7 Risk assessment

In order to secure that the project evolves in accordance with the quality level and timeline stated in the Project Description, the group may include a Risk assessment. The assessment can be formed as a matrix where the most possible risks in the project are defined, calculated and paired with possible preventive actions. The matrix may look like this:

Risks	Description	Likelihood Scale: 1-5 5 = high risk	Severity Scale: 1-5 5 = high risk	Product of likelihood and severity	Risk mitigation e.g. Preventive- & Responsive actions	Identifiers	Responsible
Risk 1	Lack of time before hand-in	4	5	20	Tight control of time schedule; corrective action – work weekends	Making excuses, blaming others	XXX
Risk 2							

Table 2 Risk assessment matrix example.



4.2.8 Sources of information

In technical reports in general, many types of sources of informations or references may be used. These include book chapters, reports, patents, standards, interviews, dissertations, conference proceedings and peer reviewed papers in scientific journals. Due to questions about objectivity, newspaper articles, brochures and web addresses are often used sparingly.

There are two main ways to use an information source:

- The typical case is to paraphrase the source, i.e. rewriting the information in the project group's own words. Here, the source must be referenced.
- When it is important to use the exact words of the previous work, direct quotes may be used. Quotes must always be 100 % accurate, and quotation marks must be used. In addition to quotation marks, the source must be referenced.

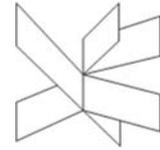
Plagiarism is the use of previous work in the form of words, figures, ideas, etc. without crediting the source. It is considered ethically dishonest and is not permitted in project reports at VIA Engineering. The offence is serious and may result in a range of outcomes including re-writing the report, failure of the course or the student(s) being expelled. Automatic tools in WISEflow are used by the supervisor to assist in the detection of plagiarism.

A list of the references used in the Project Report must be included as a separate chapter at the end of the report. Each source in the list must be referred to in the text.

For VIA Engineering project reports, the HarvardAnglia reference system must be used. This system describes how to reference a source of information in the text as well as how to structure the reference list in the final chapter. More information regarding this standard can be found at <http://libweb.anglia.ac.uk/referencing/harvard.htm>.

4.3 Back matter

Back matter of a project description are appendices. Appendices contain various types of information that support the content of the main matter including Group Contract,

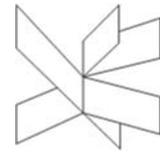


description of the problem analysis phase, technical descriptions and pre-analysis documents:

- **Group contract:** A Group Contract include a discussion of the ground rules of the group collaboration. In addition to a working title for the project and a list of project members, the Group Contract must include the following:
 - A description of planned group procedures including meetings, peer-review and communication.
 - An identification of personal and group expectations including goals, level of ambition and responsibilities.
 - A specification of the consequences for failing to follow procedures and fulfil expectations.

A Microsoft Word template is available for use, if desired.

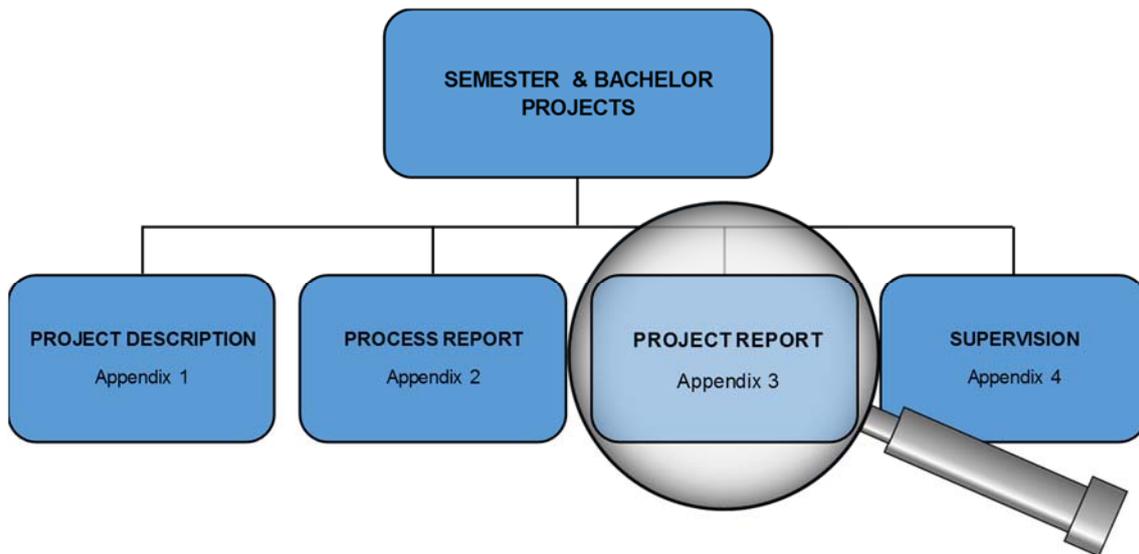
- **Description of the problem analysis phase.** This include mind-maps, Ishikawa diagrams, interview summaries.
- **Pre-analysis documents.** These includes technical descriptions, product description, standard methods, etc.



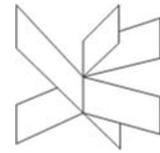
APPENDIX 3

Project Report

VIA ENGINEERING GUIDELINES



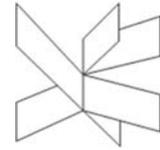
Version: August 2018
Responsible: lora@via.dk



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Appendix A: Checklist for The Project Report



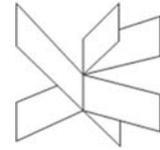
1 Introduction

The overall purpose of a Project Report is to communicate information which has been compiled during a semester project or bachelor project to a target audience. Typically, engineering reports do not undergo rigorous third-party review, are published only locally, and have a limited distribution channel. In this way, engineering reports may be considered “grey literature”.

The guidelines presented here are valid across all of VIA Engineering and describe requirements (indicated by the word “must”) and recommendations for Project Reports. It should be noted that following this guidelines is a necessary, but not sufficient, condition for a project group to receive a high grade for their work. In order to allow for the greatest possible freedom in creating the Project Report, this guideline describes only a minimum of requirements and recommendations.

The Project Report guidelines belong to a set of guidelines for project work in VIA Engineering. More information about this set of guidelines is found in the current version of the master document “Semester & Bachelor Projects – VIA Engineering Guidelines”.

Additional information can be found in /1/ and /2/.



2 General requirements

2.1 Project Report length

The primary purpose for having a Project Report length requirement is to ensure that the length of the Project Report reflects the intended workload of the students. It should be remembered, however, that length is only one element of a good Project Report. The overall principle for good reports is that quality goes before quantity. Thus, a clear, concise text of fewer pages has higher value than a longer report consisting of redundant, incoherent, less relevant content. Unnecessarily long reports may influence the assessment of the project report negatively just as easily as a report which is too short – ultimately to the extent that the project may not be approved.

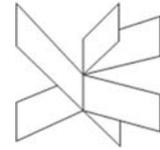
The general length requirement for a Project Report is:

Between 50,000 and 150,000 characters

(This count applies to the entire Project Report excluding appendices, and includes spaces, as well as 800 characters per self-produced figure)

Factors influencing the length requirement: A narrower length interval (within these general requirements) may be given by the supervisor for a specific project. Factors influencing the length include total ECTS points of the project, number of students in the project group, which engineering field, amount of self-produced parts in appendices, etc. The supervisor has the final word in determining if the length of the Project Report is acceptable.

Standard page length is often cited as 2400 characters. Please note, however, that pages often also include figures, tables and blank lines, and may consist of significantly fewer characters.



2.2 Confidentiality

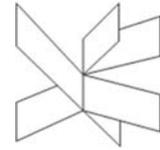
If a Project Report is confidential due to company interests, this must be indicated on the title page and as a water mark on all the report pages. A confidentiality agreement must be made with the company. /3/

2.3 Authorship

During the project examination, students are evaluated individually. A list of sections and authors must therefore be included as an appendix. An appendix to the report must clearly state which student wrote which sections. This placement allows the examiners to judge the written parts without prejudice. It is acceptable to have more than one author on a section, but it is not acceptable to have all project group members on all sections.

2.4 Use of template

A Microsoft Word template for VIA Engineering Project Reports is available electronically for use by the project group. The use of this template optional.



3 Writing style

Writing is a challenging task, no matter what the purpose. Many rules and recommendations are universal for all types of writing, including correct grammar, correct spelling, and identifying the target audience. In addition to these universal aspects, academic writing has a number of specific conventions which contrast with many other types of writing. For the Project Report to obtain a high grade, these conventions must be followed. The following sections discuss the target audience and language conventions for Project Reports.

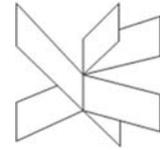
3.1 Target audience

Students often have questions regarding the target audience of the Project Report. In general, the target audience is composed of the project supervisor, the external examiner, and anyone else who may be professionally interested in the subject (such as someone from a company that is involved in the work). Students authors should assume that the target audience is intelligent and has a basic understanding of the field in question. However, the students should not assume that the target audience is familiar with specific aspects of the work carried out by the project group.

3.2 Language conventions

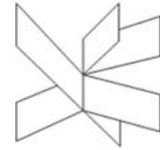
Academic writing is associated with particular choices in grammar and vocabulary. Selected language conventions for Project Reports include the following:

- **Concise style:** Academic language should be concise. This means that the writing should be brief in form, but comprehensive in scope, giving all necessary information with as few words as possible. All unnecessary sentences should be excluded.
- **Professional terminology:** Every profession has some terminology that is specific for the field and may be different from other fields. Project Reports should make use of this terminology.
- **Voice:** In grammar, voice can be active or passive. Academic writing intentionally favours the passive voice since it creates a distance between the author and the



subject matter in order to emphasize objectivity. Examples include changing “the project group designed the software” (active) to “the software was designed” (passive) and “the project group tested the equipment” (active) to “the equipment was tested” (passive).

- **Tense:** For the most part, the text should use past tense for project activities, i.e. “the sample was collected...” (rather than “the sample will be collected” or “the sample has been collected”). Present tense may be used in some instances, for example background information, i.e. “energy optimization is an important issue...”.
- **Person:** Use of first and second person (I, me, we, us, you) should be avoided in project reports. This is done intentionally to focus on the subject matter rather than the persons carrying out the work.
- **Contractions:** Contractions should be avoided. A contraction is the omission of letters in a word or words, i.e. “isn’t”.
- **Colloquial:** Colloquial language should be avoided. Colloquial language is a casual and conversational style of language, i.e. “buzz off” or “go bananas”.
- **Slang:** Slang should be avoided. Slang is non-standard words that imply familiarity, lower dignity, etc., i.e. “my bad”.
- **Emotive language:** Emotive language arouses feelings. It is therefore subjective rather than neutral. To promote objectivity, emotive language must be avoided.



4 Visuals (figures and tables)

The purpose of visuals (such as sketches, graphs, diagrams, photographs, figures and tables) is to assist the reader in understanding the report more clearly. Visuals should be tailored to emphasize the writer's point. If the point is to compare two sets of data, for example, both sets should be included in one graph rather than two separate graphs.

In the following, selected requirements are given.

Numbering: All visuals must be given a number. It is recommended that the word processing program is set up to keep track of this automatically.

Text description: All visuals must have a text description immediately above or below the visual.

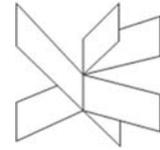
Internal referencing: All visuals in a report must be referred to by number in the text body of the report.

Borrowed visuals: If a visual is borrowed from the literature, this must be referenced in the visual text description and included in the reference section of the Project Report. This is true even if the visual was redrawn with changes from the original. If this is not done, it is considered plagiarism.

Quality: In some cases, visuals included in a project report are captured in pixel format in low resolution. This is especially a problem when a small visual is enlarged. Adequate resolution must be ensured.

Special details: If relevant, visuals should include the following:

- A legend to explain symbols
- Scale, north arrow and publisher for maps
- Labelled axes for graphs



5 Sources of information

In engineering reports in general, many types of information sources or references may be used. These include reports, book chapters, peer reviewed papers in scientific journals, conference proceedings, dissertations, patents, standards and interviews. Due to questions about objectivity, commercial web addresses, newspaper articles and brochures are often used sparingly. The use of information sources allows academic writing to use supported arguments and to avoid personal opinions where possible.

There are two main ways to use an information source:

Paraphrasing: The typical case is to paraphrase the source, i.e. rewriting the information in the project group's own words. Here, the source must be referenced.

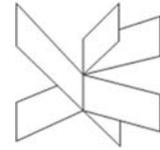
Quoting: When it is important to use the exact words of the previous work, direct quotes may be used. Quotes must always be 100 % accurate, and quotation marks must be used. In addition to quotation marks, the source must be referenced. Quotes are rarely used and generally for things such as standards or interviews.

Plagiarism is the use of previous work in the form of words, figures, ideas, etc. without crediting the source. It is considered ethically dishonest and is not permitted in project reports at VIA Engineering. The offence is serious and may result in a range of outcomes including re-writing the report, failure of the course or the student(s) being expelled from school. Automatic tools in WISEflow are used by the supervisor to assist in the detection of plagiarism.

A list of the references used in the Project Report must be included as a separate chapter at the end of the report. Each source in the list must be referred to in the text.

For VIA Engineering project reports, the Harvard Anglia reference system must be used. This system describes how to reference a source of information in the text as well as how to structure the reference list in the final chapter. A quick guide can be found at: <https://libweb.anglia.ac.uk/referencing/files/QuickHarvardGuide2018.pdf>.

In general, footnotes should not be used.



6 Project Report Structure

The Project Report consists of three parts:

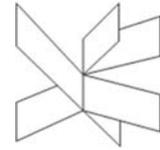
1. **Front matter:** Meta-data ranging from the report cover to the acknowledgements.
2. **Main matter:** The report from the introduction to conclusion, including a summary and the reference list.
3. **Back matter:** Supplemental matter in support of the main matter including appendices, glossary, list of symbols, etc. as needed.

6.1 Project Report front matter

The front matter of a project report may include the following elements:

- **Cover (optional):** A report cover may be formatted as desired.
- **Title page (required):** The design of the title page may be determined by the project group. However, the title page must include the following elements:
 - name and logo of the educational institution
 - the title of the report
 - the name of the study programme and semester
 - the name(s) of the student(s)
 - number of characters in the main text
 - the name of the supervisor.
 - date of completion
 - a declaration with signature(s) of the student(s). Each student must sign a declaration of authorship in the project report stating “I hereby declare that my project group and I prepared this project report and that all sources of information have been duly acknowledged” or something similar.

In addition, it is recommended to include photographs of the students (to aid the external examiner) and the logo of any company included in the project report.



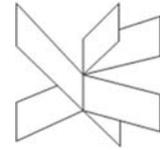
- **Preface (optional):** A preface may be included if additional comments on context of the report are needed. The relevance of including a preface depends on the type of project. The project group and the supervisor should discuss the need to include a preface.
- **Table of contents (required):** The project report must include a table of contents which outlines the structure of the report and how the information is organized.
- **List of figures and tables (required):** This list must contain a full listing of all figures and tables used in the report.
- **Acknowledgements (optional):** Acknowledgement of persons, companies, institutions, who have provided helpful contributions to the making of the report.
- **Summary (required):** The summary is used for first-glance reading and includes everything from the introduction to the conclusion and may not include things that are not mentioned anywhere else in the report. The summary is the last page of the front matter and is best written upon completion of the report. The summary must be ½-1 page in length and include the purpose, methods, main findings, conclusions and recommendations.

6.2 Project report main matter

The main matter of the project report includes everything from setting the stage in the introduction to describing the perspectives of the conclusions. It should be understandable without reading the appendices.

Header and Footer: The page header of the main matter of the report must include the title of the report, while the page footer of the main matter of the report must include page numbers. Additional information in the header and footer may be included if desired.

The main matter must be divided into two or three levels (chapters, sections and sub-sections, if needed). Additional levels are not recommended. The levels must be numbered using Arabic numbers. The structure of the Project Report main matter should give the reader (and the writer!) a good overview of the project and make it easy to find specific information. Report structure is therefore extremely important.



The main matter a project report is like a fish in that it has a head, a body and a tail (Figure 1). The head includes introductory material and background information. The body covers the various tasks executed in the project including a description of the methods used and a discussion of the results validity. The tail consists of the overall conclusions of the work and suggestions for using the project outcome in future work.

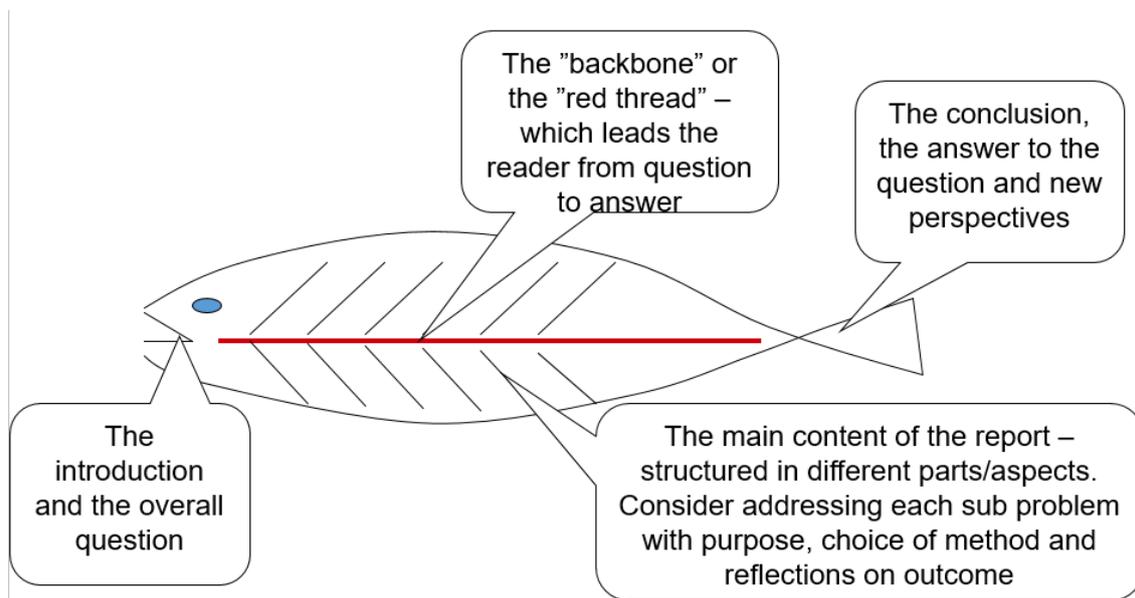
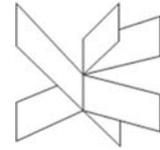


Figure 1 Structuring the main matter of the Project Report - The "Fish" model.

The names of the chapters in the Project Report vary, depending on the field of engineering and the subject matter.

Head: The head may include an introduction and theory/literature survey. Many elements of the Project Description such as the problem statement and background from literature may be re-used in the head of Project Report main matter.

- **Introduction:** The introduction includes background information, the problem statement, a justification of the project, a delimitation, etc.



- **Theory/literature survey:** The literature survey includes an overall information on what is known, what have other people done etc. The purpose with this section is to insure the uniqueness and therefore relevance of the project.

Body: The body of the Project Report main matter may include methods, results and discussion.

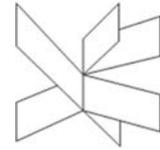
- **Methods:** Methods includes a discription of the methods, field work, laboratory work, instruments and apparatuses. It must be described in enough detail for the reader to repeat your work. The student decides if the used methods are described in an a dedicated section or in conjunction with the various subtasks adressed in the project.
- **Results/findings and Discussion:** Results and discussion are quite different subjects and may be placed in separate chapters if deemed appropriate by the project group. In the discussion, the validity of the results is evaluated and the results are put in context.

Tail: The tail of the Project Report main matter may include conclusions, recommendations, perspectives and the reference list.

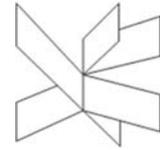
- **Conclusions:** The conclusion is a short summary of the main results of the project report and must provide answers to the questions posed in the problem formulation. The section may include recommendations and perspectives. New information may not be presented in the conclusions.
- **Reference list:** The project report must include a complete list of references showing all the sources used. It must be found as the final chapter of the main matter and follow the Harvard Anglia system.

6.3 Project Report back matter

Back matter of a project report may include the following elements:



- **Appendices:** Appendices contain various types of information that support the content of the main matter and are available for the reader but are not central to understanding the project. Appendices may include raw data, calculations, drawings, experiments, surveys etc. Each appendix must be given a number or letter and must be referred to in the project report text. In addition to the numbering, a heading describing the content of each appendix must be included. The page numbers in each appendix should start with page 1. The Project Description and the Process Report are separate documents and are therefore not included in the appendices.
- **Glossary:** A glossary with definitions of difficult words is optional.
- **List of symbols:** A list of symbols used in the report text is optional.

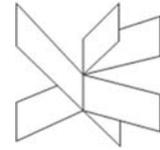


7 References

/1/ NISO, 2010. *Scientific and Technical Reports* -, Baltimore: National Information Standards Organization.

/2/ Rienecker, L, & PS Jørgensen, 2013. *The good paper. A Handbook for writing papers in higher education*. Frederiksberg: Samfundslitteratur.

/3/ VIA Engineering, in preparation. *Confidential Student Reports*, s.l.: s.n.



Appendix A: Checklist for Project Report formalia

VIA Engineering Guidelines

General requirements

- Author identification of individual sections
- Student names, numbers and photos
- Declaration of authorship with signatures
- Confidentiality clearly stated, if relevant

Language requirements

- Proper language for target audience
- Proper tenses used
- Contractions avoided
- Colloquial language avoided
- Slang avoided
- First person avoided
- Emotive language avoided
- Passive verbs used
- Arguments supported by logic and literature

Visuals requirements

- Figures, tables, etc. numbered
- Figures, tables, etc. referenced in text in the main matter
- Scale, north arrow, publisher included on maps

Axes on graphs labelled

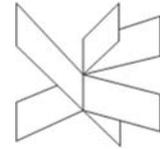
- Legend used when needed for explaining symbols

Main matter requirements

- Report title included on page header
- Page numbers included on page footer
- Introduction starts with page 1
- Chapters and sections numbered
- Main matter divided into two or three levels
- All paraphrased information referenced
- All quotes given with “ and referenced
- References in the main matter given in Havard/Anglia style
- Reference list in Harvard/Anglia style
- All entries in the reference list referred to in the text

Appendix requirements

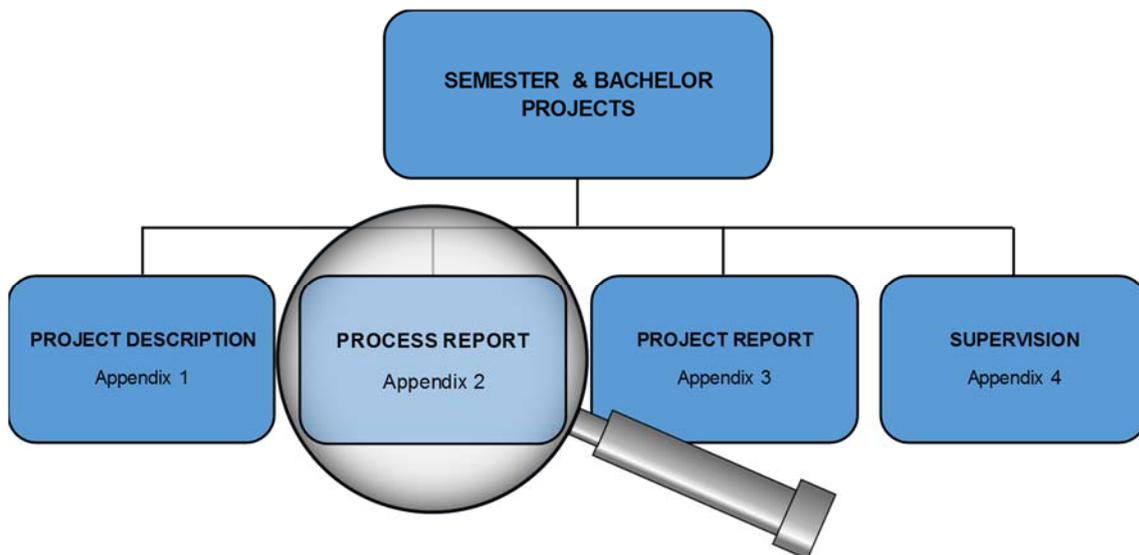
- Appendices numbered
- Appendices referred to in the text
- Page numbers start with 1 for each appendix



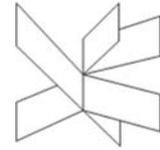
APPENDIX 2

Process Report

VIA ENGINEERING GUIDELINES



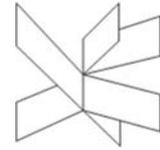
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Appendix A: Suggested issues for Personal Reflections



1 Introduction

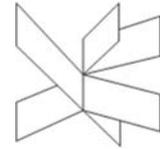
The Process Report is an independent report with the purpose to make the student reflect on the group process – especially on own contribution and interaction – in order to become more efficient in future group work.

Where the Project Report shows what you have achieved and your project results, the Process Report involves the process of your project work and your reflections, i.e. your learning process, evaluation of used tools and methods, cooperation issues, planning and execution. It can also involve reflections on the project work from the project initiation phase to the completion of the project.

Criticism is acceptable as long as it is constructive. In order to ensure the usability of the Process Report, personal and unargued blaming must under all circumstances be avoided. Remember that the content of the Process Report is open to the whole group and the supervisor.

The guidelines presented here are valid across all of VIA Engineering and describe requirements and recommendations for Process Reports. It should be noted that following this guidelines is necessary, but not sufficient, for a project group to receive a high grade for their work.

The Process Report guidelines belongs to a set of guidelines for project work in VIA Engineering. More information about this set of guidelines is found in the current version of the master document “Semester & Bachelor Projects – VIA Engineering Guidelines”.



2 Text

The Process Report should be written taken into consideration universal rules and recommendations such as correct grammar, correct spelling, and identifying the target audience. However, the Process Report is reflective writing and can accordingly, in contrast to technical writing, use a more conversational language.

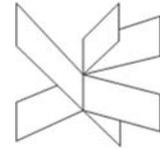
2.1 Universal language elements

One universal element is highlighted:

- **Target audience:** The target audience is the project group and the supervisor. Thus, the Process Report should be written with the purpose for the group members to have a tool for improving future group work and for the supervisor to optimize his/her supervision.

2.2 Language conventions

Informal language is in general accepted in the Process Report. For the Process Report **use of first person** (I, me, we, us). **Casual, conversational, emotive language** and **slang** is accepted if it contributes to the passing of information.



3 Process Report Structure

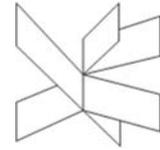
It is suggested that the Process Report has a structure as follows:

1. **Front matter:** Meta-data ranging from the report cover to the table of content.
2. **Main matter:** The report from the introduction to personal reflections and group summary.
3. **Back matter:** Appendices, e.g. log book and minutes of meetings.

3.1 Front matter

The front matter of a process report may include the following elements:

- **Header and Footer:** The page header of the main matter of the report must include the title of the report, while the page footer of the main matter of the report must include page numbers. Additional information in the header and footer may be included if desired.
- **Cover:** A report cover is optional and may be formatted as desired.
- **Title page:** The design of the title page may be determined by the project group. However, the title page must include the following elements:
 - name and logo of the educational institution
 - the title of the report
 - the name of the study programme and semester
 - the name(s) of the student(s)
 - number of characters
 - the name of the supervisor
 - date
- **Preface:** A preface may be included if additional comments on context of the report are needed. The relevance of including a preface depends on the type of project. The project group and the supervisor should discuss the need to include a preface.
- **Table of contents:** The process report must include a table of contents which outlines the structure of the report and how the information is organized.



3.2 Main matter

The main matter includes everything from describing the group members in the introduction to reflecting on the project work.

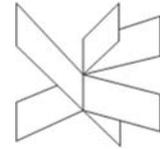
The main matter must be divided into chapters and sections. If needed, a third level (sub-sections) may be used. Additional levels, however, are not recommended. The levels must be numbered using Arabic numbers. The structure of the main matter of a process report should give the reader (and the writer!) a good overview of the process and make it easy to find specific information. Report structure is therefore extremely important.

The number of pages in a process report depends on the number of students. Unless otherwise stated by the supervisor, process reports must be 10-20 self-produced pages (for a group of five, excluding appendices). One page of text is about 2400 characters.

A Microsoft Word template for VIA Engineering Process Reports is available electronically for use by the project group, but use of this template is not required.

Typical chapters in the main matter are given below. The project group may vary from this recommendation, but should be able to explain the reason for any changes:

- **Introduction.** Overall factual description of process and progress based upon factual data from e.g: Log book, minutes of meetings with the group, the supervisors and companies.
- **Group description.** Introduction of the group members, cultural background and project experience prior to the project start.
- **Project Initiation.** The groups reflections on the project initiation phase.
- **Project Description.** The groups reflections on the project description phase.
- **Project Execution.** The groups reflections on the project execution phase, including reflections over methods as well as project results.
- **Personal Reflections.** Personal reflections for each member of the group regarding his or her experience with the project group work and with project organized studies and problem-based learning. As a guideline, the personal reflections must be approximately 1-3 pages for each student.

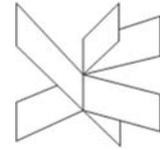


- **Supervision.** The groups reflections on the supervision.
Conclusions. The Group Summary on what to do and not to do in group work, including a list of recommendations.

Appendix A may be used as a guidance for the reflections in the main matter.

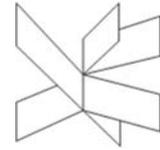
3.3 Back matter

Back matter of a process report are appendices. Appendices contain various types of information that support the content of the main matter and are available for the reader but are not central to understanding the report. Appendices of a process report may include the log book, minutes of meetings with the project group and the supervisor, etc.



4 Portfolio

For students doing a portfolio, the personal reflections section should be copied to the Portfolio and used as a basis for setting personal approach and learning objectives for the coming projects.



Appendix A: Suggested issues for Personal Reflections

VIA Engineering Guidelines

The following may be used as inspiration for the personal reflections, but should only be included in the report when relevant.

Project Initiation

- Why did you select the topic?
- How was the group formed?
- How successful was your planning?
- What kind of project planning tools did you use?

Project Description

- How did you define your problem?
- Did you set up a realistic goal?
- What did you want to achieve?

Project Execution

Methods:

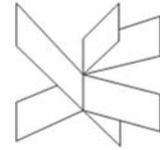
- How did you follow up on your plan for the project?
- Which methods did you use and were they successful?
- Would you use have used other methods, if starting the project today?

Project results:

- In what way are you satisfied with the project results?
- What kind of project risks did you identify and how did you monitor and handle the risks?
- What was less successful? Explain why?

Personal Reflections

Group work:



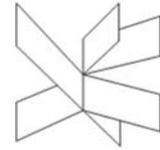
- What is the content of the group contract and how did the group live up to this content?
- How did you feel responsible for the group project? (Be specific and explain in general and by means of examples).
- Give examples of how the group contract has had a direct impact on the success/failure of the group cooperation.
- What adjustments do you suggest for the next group contract?
- How did the group work together – did each group member contribute satisfactory?
- Did all group members deliver to a maximum to the group and did the group utilize each member's expertise?
- How was the motivation of the group? What motivated the group and its members, what demotivated the group?
- How did you benefit from the multicultural group work and what were the biggest challenges?
- What did you learn about your own ability to cooperate in a group context?
- Based upon your experiences from this project, what will you try to do differently next time you are involved in group work?

Project organized studies and problem-based learning:

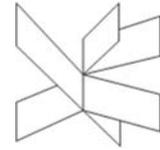
- What do you think are the advantages of group work and of problem-based learning. Why?
- What do you think are the disadvantages of group work and problem-based learning. Why?
- What are the pros and cons of creating a problem formulation?
- What are the pros and cons of creating a project description?

Supervision

- In what way are you satisfied with the cooperation with your supervisor(s)?
- What was less successful? Explain why?
- When did you use your supervisor and for what?



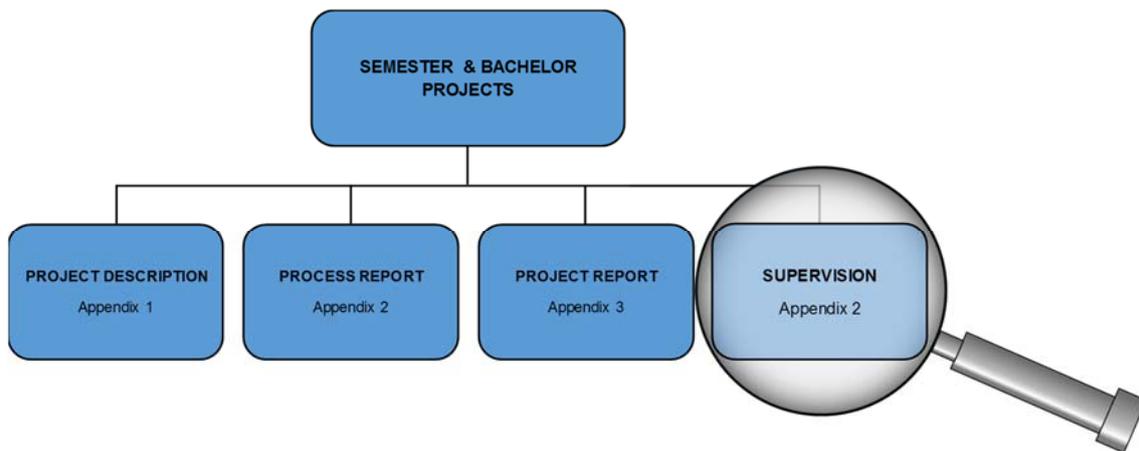
- How did your group handle the cooperation and communication with your supervisor?



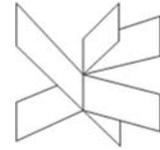
APPENDIX 4

Supervision

VIA ENGINEERING GUIDELINES



Version: August, 2018
Responsible: dans@via.dk

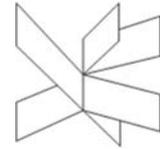


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Appendix A: Supervisor tips for constructive supervision

Appendix B: Student tips for constructive supervision

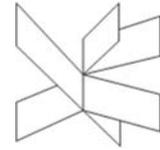


1 Introduction

This document describes the activities associated with supervision of semester and bachelor projects in VIA Engineering. Supervision includes both product supervision and process supervision.

The purpose of these guidelines is to ensure quality across projects and supervisors. All project groups are different in relation to project purpose, content, group composition, etc. Therefore, the following guidelines do not represent a set of strict rules.

The Supervision guidelines belongs to a set of guidelines for project work in VIA Engineering. More information about this set of guidelines is found in the current version of the master document “Semester & Bachelor Projects – VIA Engineering Guidelines”.



2 Roles during supervision

A project group is usually assigned one main supervisor. If the project group works with more than one field of engineering, the project group may, however, be assigned more than one supervisor. In VIA Engineering, semester projects reflect the topics taught in the semester. Therefore, all teachers in a semester team have responsibility/may expect to assist students with questions related to their own profession.

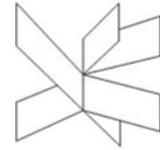
2.1 Role of the supervisor

The word “supervisor” implies that it is a person who leads someone else on his or her way. It is therefore a constructive action. The role of the supervisor is to guide students towards the production of their project work by discussing each part of the process. The supervisor should be considered a consultant and not necessarily an expert. The supervisor is there to support the project group, but not to take over responsibility for the project. This supports that the students will learn how to work problem based.

The supervisor help to ensure that the project is on the right track, living up to the requirements and learning outcomes. It is not the role of the supervisor to read and approve text, models or methods in the Project Report or Process Report. There is a fine line between giving support and giving approval. It should be made clear that supervisor comments do not indicate any final grade level of the project work. The supervisor also has a role in assisting the students through conflicts with the group work or other issues related to the process of the project work.

The supervision should be performed with constructive criticism and with respect for the students. A positive, engaged and curious attitude towards the students supports them in seeing the supervisor as a coach. The supervisor should offer tools and challenges; not answers.

Depending on their cultural background, some international students see the supervisor as a legal institution rather than a project resource, and may even feel uncomfortable in addressing the supervisor by his/her first name. They may have a misperception that contacting the supervisor is a sign of ignorance and may lead to a lower grade level. It



is therefore very important for the supervisor to clarify the supervisory role as a resource to improve project performance at the first meeting, but also to show through actual behavior that the supervisor is approachable and enjoys challenging questions and good discussions.

2.2 Role of the student

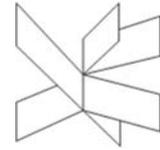
The project group is entirely responsible for the Process Report and the Project Report.

The project group is responsible for arranging meetings with the supervisor. They should plan and send the supervisor an agenda prior to the meeting, and following send out minutes of the meeting.

The project group is responsible for requesting information from the supervisor, but should not expect to get direct answers and solutions. Instead, the supervisor may guide the project group. An important learning for the students during this project period is to learn about problem based approach, analytical thinking and decision-making.

The project group is responsible for time management and for delivering the required workload. It is recommended to discussing the workload related to ECTS as project groups often underestimate the expected workload.

The students are encouraged to work in their project groups, not only when they are discussing issues and making decisions, but also during work on individual parts. This encourages a better relationship between group members and thereby a better overall group performance. Further, it allows for immediate discussions and clarifications during the writing of specific parts of the project. Each group member is responsible to know what other group members are working on. Thereby all group members are responsible for the final Project Report and Process Report as well as the main decisions made during the project work.



2.3 Meetings between students and supervisor

Meetings between students and supervisor usually follow a request by the project group.

A meeting normally consist of 3 phases:

1. Preparation for the meeting by the students and the supervisor based on a written agenda that the students provide with the meeting request.
2. The meeting itself. Here students divide roles of chairperson, minute taker or other roles between the group members.
3. After-evaluation. Students as well as supervisor reflect on the outcome of the meeting. To ensure that a project progresses as intended, the supervisor can assist the students by discussing the learning outcomes. The students make minutes of the meeting and share with the supervisor. This can ensure that the students and the supervisor understood the decisions of the meeting the same way. Minutes of the meetings are included in an Appendix of the Process Report.

3 Supervision during the project work phases

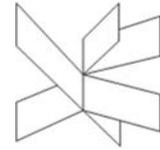
In the following sections, requirements of the supervisor(s) are given for each of the project phases of the project work during the semester projects (term projects).

3.1 Project Initiation

Prior to the initiation phase, the supervisor(s) decides which method of group formation to follow. The supervisor(s) must then describe the ground rules for group formation to the class. Normally, the supervisor(s) will be present during the actual group formation to ensure that all students are satisfied with their placement and to step in if there are difficulties.

The supervisor(s) must also describe which topics may be selected by the project groups.

After the Group Formation & Topic Selection document is submitted by the project groups, the supervisor(s) must approve the document or give an explanation for why approval was not possible.



3.2 Project Description

During the Project Description phase, the students call the first meeting with the supervisor(s) with the following agenda:

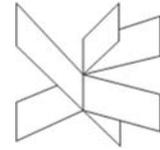
1. Mutual introduction of participants and project subject.
2. Weekly Meeting Schedule (Dates, time, place, initiator, agenda).
3. The supervisor specifies the role as supervisor in relation to the project and the group.

If the students fail to do so, the supervisor(s) must take action.

The students by then often do not know a lot about their selected topic and must be guided on how to work on the project. The focus should especially be put on the fact that the group should work problem oriented rather than focus on methods and solutions. The initial idea the project group shows up with might be changed in accordance with the supervisor during this meeting.

It should also be clarified that it is the responsibility of the project group to arrange meetings with the supervisor in the future. However, in the case of a project group not working well (or not working at all) or simply do not call for meetings, the supervisor is expected to be proactive in order to make sure the project group will go through the learning process of running a project and meet for supervision. Also, if a group member does not work together with the rest of the group on the project, it is the supervisor's decision if the person should be excluded from the group. These unfortunate situations should, however, influence the final (individual) grade of the project negatively through evaluation of the process.

After the draft of the Project Description is submitted, the supervisor(s) must approve the work in accordance with the master document "Semester & Bachelor Projects – VIA Engineering Guidelines". There is no formal grading at this stage, but the supervisor must ensure that the project group receives feedback, especially regarding the Problem Statement. A minimum of one revision must be made by the project group. Often, numerous revisions are necessary to reach an acceptable Project Statement.



3.3 Project Execution

During the project execution phase, the supervisor(s) must support the project group in maintaining focus and working according to the Project Description. However, during this time, the project group may discover new issues, angles, methods and/or theories that will call for a need to make changes to the Project Description. This is allowed after approval by the supervisor(s), and it requires that a revised version of the Project Description is made and signed.

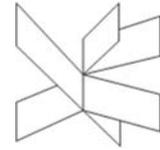
Throughout the execution phase of the project, the supervisor must be available for weekly meetings with the project group. The duration of these meetings may deviate from project to project: some groups may need relatively more support in the project description phase; other groups may need more support to finalize the project. The supervisor is not responsible for setting the agenda/order of business in the weekly meetings. However, the supervisor should ensure that process as well as product subjects are addressed.

Group conflicts may arise during the execution phase. The supervisor should step in to ensure that these conflicts are thoroughly discussed and solved.

3.4 Project Evaluation

When the Process Report and the Project Report are submitted, the supervisor is responsible to read these reports in preparation for the examination.

The supervisor must also prepare the students questioning period before the examination. Finally, in collaboration with the external examiner, the supervisor is responsible for giving the students individual grades according to Danish legislation.



4 Process for handling serious problems

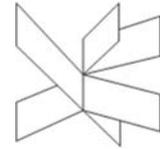
4.1 Group conflicts

All efforts should be made to ensure that the group functions well. In some cases, it is necessary to revise the Group Contract. If all else fails, the supervisor may exclude a group member from a project group. If another group cannot be found, and as a last resort, the student may continue project work individually. However, the group must refer to the head of department before taking this step.

4.2 Plagiarism

The supervisor should be aware of examples of plagiarism, and confront the group with any suspicions about this issue as early in the process as possible. Hopefully by doing so, the issue will be solved in time.

However, examples of plagiarism may not be found until after the project has been handed in. In this case, the supervisor should contact the relevant head of programme, and together they will decide what to do about the project. It is difficult to establish a “triviality limit” – in principle, no plagiarism is tolerated - and therefore each example of plagiarism should be treated on a case-by-case decision making.



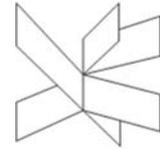
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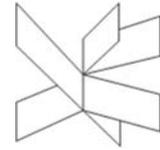
Brockbank, A. and McGill, I., (1998) Facilitating reflective learning in higher education, The Society for Research into Higher Education, Buckingham: SRHE

Pettersen, Roar C. (1999) Problembaseret læring, Dafolo Forlag, Frederikshavn.

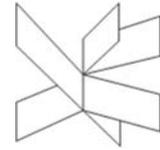


Appendix A: Supervisor tips for constructive supervision

- Read and follow VIA Engineering guidelines for semester- and bachelor projects
- Matching of expectations: Investigate what the student expects of you as a supervisor in terms of time and effort and provide a clear message as to what you can offer as a supervisor.
- Help the students to narrow their project scope and to make a clear Problem Statement.
- Make sure to explicitly match the student's ambition level (and not your own) with the realities.
- Recommend that the student start writing early in the course.
- Supervise with respect for the student's intentions with the project work, taking into account the individual project phases. It eases the work for the student and further promotes the independence of the project work.
- If the student's intentions are not realistic or otherwise problematic, the supervisor must intervene and show new ways - but still with respect to the student's wishes. Advise not from what you would have done - remember it is the student's and not your ambition level that must be satisfied.
- Supervise providing overall criticism regarding problem formulation, methodology, focus, substance, argumentation, etc., before more detailed criticism of concrete problems and ambiguities.
- Always remember to point out the qualities in the project work. These are the ones to be elaborated further.
- Require explicit context of the project reports. Ask for the main thread.
- Ovoid to lead the dialog. If possible, let the student point out the problems and act as a coach.



- Make clear that the project work and the written reports must be in accordance with VIA Engineering guidelines.
- Allow students to record the meetings. A recording may reveal any misunderstandings and ensure that important information is not lost along the way.
- Call a spade a spade so the student is never in doubt as to what you find problematic and then show ways to improvements.
- Be active as a supervisor if students are not taking actions. Show them new ways to move forward.
- Recommend students to receive feedback of written parts from other group members or other project groups.



Appendix B: Student tips for constructive supervision

- Read and follow VIA Engineering guidelines for semester- and bachelor projects.
- Request a meeting with the supervisor early in the project period.
- Make a useful agenda for meetings with the supervisor.
- Send examples of written work to the supervisor along with questions on how to write, how to narrow a Problem Statement, etc.
- Remember that you are the expert in your project. Teach the supervisor about the project, including the purpose, Problem Statement, method, etc.
- Know that the group itself is responsible for the project and its final reports.
- Make the supervisor aware of possible specific requests for supervision, e.g. by making agreements with the supervisor about the same.