Programme: Construction

Mountain Bike Trail Planning, Construction and Maintenance

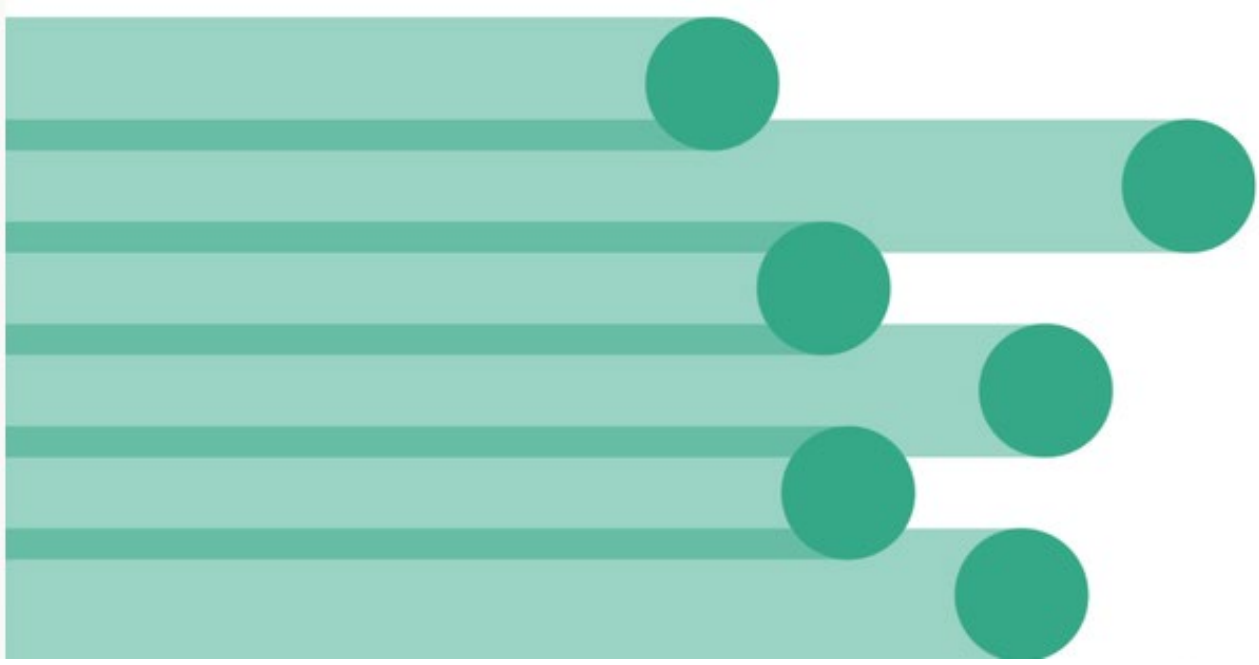
Syllabus for higher vocational education

Syllabus specifications for:

Course module as full-time campus study

Course module as a part time campus study

Course module as part-time online study in combination with conventions



Content

1 Preface

The higher vocational education course for **Mountain Bike Trail Planning, Construction and Maintenance** is designed as a stand-alone course according to the specifications in this syllabus. The course awards 30 ECTS when successfully completed.
A mountainbike trail builder represents professional sustainable trail development. The profession provide trail design, construction, management and advocacy that enhance resource protection, recreational opportunities, economic development, active citizens, and connected communities worldwide.
The study programme for **Mountain Bike Trail Planning, Construction and Maintenance** is targeted to the competence needs of the new and rapidly growing sector of mountain biking (MTB). These competence needs are established through two comprehensive studies in the winter of 2019/2020 directed towards the central MTB stakeholder groups. The studies were conducted by Edinburgh Napier University as a part of the ERASMUS+ project DIRTT (Developing Inter European Resources for Trailbuilder Training) where Fagskolen i Viken is the coordinating institution. The DIRTT consortium consists of:

- International Mountain Bicycling Association (IMBA) Europe, NL
- Scottish Cyclists Union, UK
- DGI, Denmark
- Municipio de Agueda, PT
- Bike Plan AG, CH
- Edinburgh Napier University, UK
- Opplysningskontoret for Terrengsykling, NO

Based on national studies it is reasonable to estimate a comprehensive growth in the coming years. MTB's contribution to the health agenda is rising accordingly. The six countries represented in the development group of this programme have a domestic participation ranging from 3 - 6% of the adult population. This is expected to rise by at least 1 - 2% in the next 5 years based on the current trends, as market research shows that the global mountain bike market is expected to expand at ~10% CAGR (2018 to 2023)[1].

[1] https://menafn.com/1099480674/Mountain-Bike-Market-2017-2023-Industry-Analysis-Size-Share-Growth-Trends-and-Forecast

2 Admission requirements

To be admitted into the course the applicant must hold a relevant trade or journeyman's certificate, or relevant experience validated as prior learning.

Trade or journeyman's certificate that gives right for admission:

- Educational programme in construction within the vocation of **Road and construction worker**
- Educational programme in construction within the vocation of **Construction vehicle/machinery operator**
- Educational programme in construction within the vocation of **Landscaper**
- Educational programme in construction within the vocation of **Road constructor and maintenance worker**
- Educational programme in **Agriculture, fishing and forestry** within the vocation of **Forestry worker**
- Educational programme in **Agriculture, fishing and forestry** within the vocation of **Gardener**

Relevant work experience that may be validated as prior learning, minimum 5 years:

- Non Certified experience from one of the above-mentioned vocations
- Trail building

The Mountain Bike sector relies to a large extent on volunteer resources for trail building, so there are a high number of potential candidates for the programme qualified through voluntary work. This experience will count towards validated prior learning if properly documented.

3 General Learning Outcomes

Learning outcomes are defined as statements of what a learner knows, understands and is able to do upon completion of a learning process. This syllabus is based on the European Qualifications Framework (EQF), learning outcomes are therefore defined in terms of knowledge, skills and competence which are understood as follows:

- Knowledge means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices related to a field of work or study. In the context of EQF, knowledge is described as theoretical and/or factual.
- Skills means the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the EQF, skills are described as cognitive or practical skills.
- Competence means the proven ability to use knowledge, skills and personal, social and methodological abilities in work or study situations and in professional and/or personal development. In the context of the EQF, competence is described in terms of responsibility and autonomy.

Knowledge

The candidate knows:

- The history of mountain biking and the evolution of mountain biking facilities
- The different styles of mountain biking trails and their relation to trail difficulty and user experience
- The role of mountain biking in the fields of sports, health, recreational activities and tourism
- Legislation relevant to building mountain bike trail facilities
- The aspects of managing a mountain biking trail such as coexistence with other activities, HSE and maintenance
- The factors to consider when planning and designing a mountain biking trail building project in a sustainable manner
- The principles of cost control, HR management, HSE management and project management needed for planning, coordinating and managing a project for building a mountain biking trail facility
- The importance of the mountain biking activity in a societal and value-creation perspective
- How to update his/her vocational knowledge
- Mountain bike trail construction techniques
- The impact of recreation on flora & fauna
- Basic concepts of vocational pedagogy and didactics with the aim of training volunteers in the mountain bike trail building field

Skills

The candidate is able to:

- Exercise cost control, HR management, HSE management and project management needed for planning, coordinating, and managing a project for building a mountain biking trail facility
- Master relevant tools for building and maintaining a mountain biking trail facility

- Master relevant tools for cost control, HR management, HSE (Health, Safety and Environment) management and project management needed for coordinating and managing a project for building a mountain biking trail facility
- Manage a mountain biking trail facility with regard for factors such as economy, coexistence with other activities, quality, HSE, maintenance and minimum impact on the natural environment
- Find information and material that is relevant to a mountain biking trail facility related problem
- Study a situation in a mountain biking trail facility and identify issues and what measures need to be implemented
- Recognize different landscape types and habitats and cultural heritage or archeological sites
- Train volunteers in basic trail building and trail maintenance techniques
- Identify the relevant measures and successfully minimize the impacts of recreation on flora and fauna

Competence

The candidate is responsible for:

- Utilising the ethical principles that apply in the trade/ field of work
- Exercising an ethical attitude in vocational practice
- Carrying out work based on the needs of the mountain biking community and affected target groups
- Building relations with his/her peers, also across discipline boundaries, and with external target groups
- Developing work methods, products and/or services of relevance to the mountain biking community

4 The structure and organisation of the course

○ Period of study

Fagskolen i Viken has organised the Mountain Bike Trail Planning, Construction and Maintenance in the following ways:

- Three subjects with a total of 30 ECTS as full-time study
- Three subjects with a total of 30 ECTS as as an online-based part-time study
- Three subjects with a total of 30 ECTS as as an online-based part-time study with session-based teaching

Full-time study
The full-time study is a one semester programme. The students follow a set timetable during the semester.

Part-time study
The part-time study is a one semester programme distributed in time over two or more semesters, for example one day per week. The students follow a set timetable during the study.

Online Part-time course
The online-based part-time study is a one semester study divided two semesters. The studies are carried out as a combination of sessions, independent study activities and guided activities. There are two sessions during the semester where each session lasts up until a full working week. Academic supervision by teachers usually takes place in the evening two days a week on an online-based conference system, which makes two-way communication and interactivity possible.

4.1 Instruction

4.1.1 Full-time study

Overall, the same working methods are used in both the full-time study and the online-based part-time study. Due to the framework set by online-based work, some working methods are used to a greater degree in this connection. Nonetheless, we see that working methods that previously were unique for online-based studies are getting used more and more in full-time studies as a supplement where it is practical. Working methods that are mainly used in online-based part-time studies are dealt with in a section of its own.

Teaching methods

Teaching includes the activities where an interaction between teacher and student takes place. This can happen both synchronously in real time and asynchronously such as, for instance, via a video recording. The role of the teaching is to contribute to developing the knowledge, skills and general qualifications that the student will not be able to develop through self-study. The teaching will structure and support the student in the learning process and prepare him/her to overcome barriers in their progression in the subjects.

The teaching is a collaboration arena that strengthens the students' general qualifications.

Varied working methods and learning strategies are used to achieve the best possible learning outcome for each student, including lectures/teaching, exercises, project work, teacher-centred instruction, practice-oriented teaching, academic supervision, group work, individual hand-in assignments, cases, presentations and practice-oriented laboratory work.

The teaching methods have been developed to involve the students and make them accountable for their work.

Learning strategies
The school uses two primary interdisciplinary learning strategies that have as their purpose to integrate and operationalise the learning outcomes from the different subjects. This way, they will be transformed into operative professional qualifications that meet with the needs of the industry.

Project work
Project work is a cornerstone in the teaching effort at Fagskolen i Viken. Through limited projects that are realistic and have increasing complexity, the students increase their ability to carry out things to completion within the subject area connected to their specialisation. In project work, knowledge from topics such as project management, HSE, communication and professional management are combined with the specialisation subjects simultaneously as relevant tools and principles for project management are used. In the last part of the study, the students will do a Main Project, usually for an external client. The working methods in general, and the framework the school sets for the planning, carrying out and documentation of the projects, require that the students have an overall perspective on the project's starting point and solution.

Knowledge-based internship
During the periods of internship, the student will work in an organisation relevant to the subject area and the content of the specialisation, and the learning outcomes of this plan. The student must get to know the organisation's activities and the different units it is comprised of, and mandatory coursework requirements must be completed concurrent with the value creation the student will take part in. The learning outcome and the framework for the internship are described in the subject Mountain Bike Trail Construction together with the mandatory coursework requirements.

4.2 Learning activities

Learning activities in principle include all activities that have learning as its main goal. They are often distinguished by the students' role in the learning process; student-driven learning activities refer to activities where the student has a more active role than with teacher-centred activities.

Student-driven learning activities include different methods and modes of working that comprise, among other things, independent work on assignments, presentations, teamwork, project work and a subject-related online discussion forum.

The school arranges for the students to collaborate in large parts of the teaching effort through group work, discussions, feedback and social support.

Working methods
The working methods that are used are relevant and suitable to achieve the goals for vocational training. In addition to making progress in the subjects, they also include the students developing the

ability to collaborate, use communication skills and develop practical problems solving. The students will also develop the ability to see technology in a broader societal and environmental perspective.

It is assumed that the students will show initiative and take responsibility for their own studies and joint learning community as they simultaneously show a constructive and critical attitude to the study plan.

The students have practical experience within their own subject areas and that gives them the opportunity to prepare for experience-based and student-centred learning methods. Through educational supervision, the students will be drawn actively in and trained to use reflection in their learning processes. Different learning methods are used to achieve an overall competence in relation to knowledge, experiences, skills and general qualifications with each student.

Different working methods are used to achieve the best possible learning outcome for each student. This involves:

- Group work with a log and reflection notes
- Project work that has an interdisciplinary focus
- Teacher-centred instruction
- Practice-oriented teaching
- Academic supervision
- Individual work assignments
- Presentations

Mandatory coursework requirements have been compiled for each subject. Documentation of these requirements are gathered in a portfolio for each student. Interdisciplinary issues in themselves are normal in one's working life and are therefore well suited for demonstrating the totality in education and the subjects' relation to each other. Interdisciplinary issues will also prepare the students for their careers. Working with such problems is a part of the programme.

Administrative system
Students that complete their education at Fagskolen i Viken will be registered in the school's administrative system. In the system, the results from completed subjects are registered in addition to necessary personal information.

The ICT based learning platform
Fagskolen i Viken uses the ICT-based learning platform Teams. Teachers will organise and adapt learning content on the platform so that it will be available to the students. All coursework requirements, such as tests, assignments, group work and project work, are organised with deadlines, and it is possible for reminders to be send for coursework requirements that have not been submitted. This constitutes an electronic work portfolio for each student. The teacher's evaluation of the students' work will be stored in connection with the feedback regarding the coursework requirements. In addition, the learning platform works as a tool for organising and structuring the teaching effort and it is a link for internal collaboration at the school. In the learning platform the student will find, among other things, all topics in the programme, internal information for the students, a quality manual with primary documents for quality work, a description of routines, forms, a yearly planner and regulations.

Training in the use of the learning platform will be carried out during the students' first week at school. The training will include:

- Logging in
- General navigation in the platform (enquiries, subject rooms, etc.)
- Updating of the user profile (picture, contact information, etc.)
- Handing in of the coursework requirements
- Messages
- Activation of notifications for email

It is the student's responsibility to take part in the training. After the training is completed, it is expected that each student will master the different functions that are required for them to be an active student, and will ask for help themselves if there is something he/she is not able to do.

Academic supervision and follow-up

The programme has a pedagogical plan that ensures good academic supervision and following up of the students both as a group and as individuals. The teacher's role in the vocational programme is to a large extent connected to supervision and organisation to achieve flexible learning. The goal is to make the student able to place his/her experiences, knowledge, and skills in a larger context.

In the student's work with problem solving, project work and practical work individual guidance will be given both along the way and on the submitted coursework requirements. This will be carried out both via the learning platform and in the teaching. In agreement with the students, there will be times set for academic supervision. The school will arrange for a continuous improvement in the quality of teaching and thus promote the students' learning process and professional knowledge. In practice, this means that the student will be trained to think critically and to reflect on the solutions the school chooses to use.

Academic supervision is used both in connection with the theoretical work and as a part of the student's and the group's developmental process. The goal of the supervision is to show the connection between theory and practice. Reflection before, during and after an activity is essential so that their occupational practice will have a good result. The students will also achieve training in, and get experience with, colleague-based guidance to be able to use it in their own work and strengthen their reflection about their own practice.

Following up the students includes circumstances in the programme and the study situation such as individual adaptation, possibilities for student guidance and career counselling. The school can be helpful with completing forms for a leave of absence, specific recognition and other things.

Response time for the teacher's feedback
The subject teacher will respond to enquiries within the end of the following workday.

4.3 Online-based part-time study

Online-based learning activities
For the online-based part-time study, a greater selection of working methods will be used in addition to those mentioned in Chapter 4.3 in order to achieve the learning outcome. In addition to the working methods described for the full-time study, the methodology "reversed classroom" will be used with the

distribution of a part of the teaching content through asynchronous media like recorded videos and automatic presentations with sound.

The teachers have the freedom to choose the working methods and communication media they will use in the online-based teaching. They will plan and implement the production of the teaching elements (like videos, presentations, assignments, etc.) themselves in accordance with the course plan (see Chapter 4.6).

On a weekly basis, it will be specified for each subject how the online-based teaching will be carried out, and what media will be used for which teaching activity. It is a requirement that all the subject teachers will have online-based, synchronous guidance meetings with the students at least once a week. The plan of execution (based on the course plan) for each subject will be published for the students no later than Friday the week before, and normally in the "subject room" on the learning platform.

Time	**Teacher**	**Topic**	**Activities**	**Deadline**
Week 38	HVTO	Use of sources and reference technique	1: See video-lecture about the use of sources	Available from Friday 13.9. Should be watched before Wednesday 18.9
			2: Do exercises 1 and 2 about the use of sources	Should be done before Wednesday 18.9
			3: Tutorial with discussion about the use of sources and questions	Wednesday 18.9 5:30 pm to 6:15 pm.
			4: Do exercise 3 about the use of sources	Friday 20.9
			5: Start on coursework requirement 2 about the use of sources and reference technique	Tutorial Wednesday 25.9, hand in assignment Friday 27.9

Figure 1: Example of how the teaching in Vocationally-oriented Communication can be carried out for one week: It must be pointed out that the subject teacher will not correct the mentioned exercises. The coursework requirements are mandatory and will be assessed and detailed feedback will be given.

The learning platform is used for:

- Structuring of the learning flow
- Distribution of learning content
- Discussions through the learning process
- Submission of coursework requirements
- Assessment of and feedback on coursework requirements
- Communication between teacher and students, and between students

As a real-time meeting place between teacher and students, and between students, a conference platform is used. At the time being it is Zoom. This is mainly used for:

- Guidance by the teacher
- The students' group work
- In some cases as a medium for synchronous lectures

For online-based group work among the students, we recommend tools like Skype and the possibilities for sharing files and co-writing in Microsoft Office (students have free access to this). At the start of the online-based part-time study, an introduction to the different tools will be given that will be followed-up with tutorials online and during the sessions.

The subject teachers have access to different computer tools, and training resources for these, for use in the production of the online-based teaching:

- Adobe Creative Cloud with all applications
- Adobe Captivate
- Camtasia
- ScreencastOmatic
- Snagit

This list will be added to continuously when new tools are put into use.

In addition to the software, the subject teachers have access to hardware that prepares for online-based teaching, such as:

- Different video cameras and microphone solutions
- Document cameras
- Pressure sensitive screens to write on (electronic board)
- Swivl, a robot that makes the camera follow the teacher during teaching

This list will also be added to continuously when new tools are put into use.

Teaching that includes the presentation of new topics and joint tutorials in real time (synchronously) are normally recorded and posted so that the students that were not able to participate can take part in the activity. This is done in the conference tool that has embedded recording of screen and sound.

The students need to accept in advance that the recordings are to be made and distributed to the class before this is done. Any other content from the electronic boards, etc. are also posted (usually as PDF files). Synchronous and asynchronous learning activities are supported by additional resources, such as:

- Theoretical foundation (textbooks or compendiums, often in PDF format)
- Links to online resources (videos, texts, animations, simulators, etc.)
- Self-made resources like videos etc.

Learning activities during sessions
During the sessions, there will be intensive teaching, guidance and group work where labs, classrooms and visits at companies are utilized.

Participation in the sessions is not in itself mandatory. However, the sessions usually contain mandatory coursework requirements. If the student is absent from sessions, he/she is responsible for catching up on the missing teaching through self-study. If the student misses out on mandatory coursework requirements, or if they have not been approved, he/she must resume this in accordance with the procedures described in the school's quality system.

Structure of sessions
Each academic year a number of sessions are carried out on campus at a total number of about 20 days, often structured in four five-day sessions. The first session is arranged as soon as possible after school starts. Then the sessions are usually uniformly distributed throughout the school year in a way that is suitable for the students and the school.

Accurate dates for the sessions for the upcoming school year will be published on the learning platform by the end of May for current students and on the school's home page for new students.

Conference platforms
Tutorials and some of the teaching take place in a conference system where each teacher is assigned a classroom. When students and teachers connect to the conference system with microphones and cameras, all the participants have two-way sound and video communication. The conference platform is then a part of enabling teaching meetings as if they were in an ordinary classroom. On average, learning activities are carried out on the conference system twice a week in ordinary online-based part-time study. Learning activities that take place in real time are recorded and posted so that the students who are not able to participate can take part in them. Any other content from the electronic board, etc. will also be posted.

As a collaboration arena between the students, the school recommends using free and available tools like Skype. Here, the students can meet and have two-way sound and video contact. They will also have access to functions like the sharing of presentations and screen content. The online meetings can also be recorded. This, together with the possibilities for co-writing in MS Office 365, prepare the grounds for good web-based collaboration.

First session in online-based part-time study
This session is mostly used to get to know each other and establishing a good atmosphere for collaboration and the learning environment in the group. In addition, there will be training in the use of ICT tools and training in and use of the learning platform and the conference platform, together with an introduction to the first subjects that we are going to work with.

The rest of the sessions on the online-based part-time study
These sessions will be used for teaching and working with some of the mandatory coursework requirements.

Among other things, the sessions will be used for the mandatory coursework requirements which implies the use of tools that exist at the school. In addition, see the overview above.

Academic supervision and the follow-up of the online students
The same expectations will be set for the workload and handing in of coursework requirements for the students that follow the online-based part-time study as for the full-time students. They will also receive the same teacher resources.

At the start of the studies, the students will receive training on how to use the learning platform. This includes the activation of notifications, where students will receive a message on their private e-mail if they receive a message in the learning platform. The students are responsible for activating the function themselves.

If a student shows insufficient activity on the learning platform, the subject teacher will contact the head of the online-based study. The head of the study will then send out a personal message via the learning platform to the concerned student where the student gets two weeks to confirm that he/she is still a student. If the student does not reply, he/she will lose his/her place in the programme. By activating the e-mail notification function the student will receive the message even if he/she is not logged on to the learning platform.

In the same way as with ordinary classroom teaching, you can ask the subject teacher questions on the conference system during the weekly tutorials in each subject. The other ICT tools (Skype, MS Office 365) can be used for activities like group work, project work, discussions, meeting and so on. Contact with subject teachers and the head of online-based education takes place via the messenger system in the learning platform. Questions for the rest of the administration and management can be asked via e-mail or phone.

In online-based teaching many assignments will be given that are to be solved both in groups and individually to achieve the described learning outcome. The composition of the assignments is such that the students need to work both individually and in groups and seek guidance from the teacher along the way. The ICT tools make it so that the students are able to meet in real time and work together with the assignments. In addition, there is set aside fixed times for tutorials according to a set schedule, and an adaptation has been made on the discussion forums on the learning platform in which the tutor will also attend.

Examples on a timeline for work with assignments/coursework requirements:

- The assignment is published on the learning platform with a deadline.
- The students prepare and start working on the assignment, either individually or in groups (via the group rooms in the conference system)
- During the preparations the students can seek guidance via telephone, e-mail, messenger services/chat or on the forum. The students must specify what they need guidance in and the

teacher chooses whether he/she will reply verbally via telephone, via a written e-mail, via the learning platform or during student guidance in the conference platform.
- About midway, between the start and the deadline, time is made in the ordinary online-based teaching for group tutorials (in real time) in the assignments.
- After the tutorials, the students will continue their work on the assignment and they can seek guidance up until the deadline, like it is described above
- After the assignment has been handed in, the students will get feedback on what is good and what they need to work on to achieve the learning outcome

Response time for enquiries
The subject teacher will respond to enquiries by the end of the following workday.

4.4 Plans

Course plan
At the start of each subject, a course plan will be made that shows how the teaching effort is structured. The subject will be taught by a team of teachers appointed for the purpose and will be coordinated by the subject teacher that does most of the teaching in the subject. The plans contain which topics they are going to work with at which time, and which subject teacher is responsible for the activities connected to a topic. It also contains the mandatory coursework requirements and assessment work that are to be completed. The plans describe primarily how each activity is included in the total assessment of the subject, and how large a part of the assessment activities have to be completed and passed to receive a final assessment in the subject. When each assessment activity is to be done will be described in advance with the criteria for assessment.

Activity plan
In the beginning of each semester activity plans will be made for all groups. These include an overview of all mandatory coursework requirements and assessment work and they give the students an overview of dates for the completion of this work. They give students and teachers a total overview of the workload in the different phases of the learning flow. The activity plans also contain information about other joint activities for the class, such as company visits. The activity plans are accessible for the classes in the learning platform.

Examination plan
A primary plan to carry out examinations in each semester will be made.
The examination system is described in detail in Chapter 5 in the “Regulation of Admission, Study and Examination at Fagskolen i Viken”.

4.5 Documentation

The grading scale used is one from A to F where A is the best grade and F is failing the subject, or the assessment is pass or fail.

Coursework requirements
The results and assessments of mandatory coursework requirements are continuously stored on the schools learning platform in electronic portfolios. For each subject the coursework requirements are specified, and these must be completed and passed to receive grades in the subject.

Grades in subjects
A subject can be made up of one or more topics. When all the topics in the subject have been completed, a final assessment activity will be carried out, and it will be developed and assessed by the subject team together. The result of this, together with the results from the coursework requirements, forms the basis for the subject team’s decision on the subject grade. Normally the results of the coursework requirements count for 1/3 of the subject grade, while the final assessment counts for 2/3 of the subject grade.

This is in accordance to the assessment description that is in the course plan. The subject grade is documented on a form specified in the school’s quality system and is transferred to the school’s administrative system. The subject grade will be posted for the students on the learning platform or by a printout from the administrative system.

Certificate
After successfully completing the vocational education, a certificate is issued. When the student has passed all subjects, the certificate is generated from the documentation saved in the school's administrative system. In addition to subject grades, the certificate indicates a description of the main project that has been completed with a possible title such as, for instance, "Engineering Technician" and if applicable, the achieved degree that is in accordance to the Regulation for Higher Education is:

• Degree description for completed vocational education of one to one and a half year's duration (60-90 ECTS) is "Vocational College Degree".
• Degree description for completed vocational education of two-year's duration or more (minimum 120 ECTS) is "Higher Vocational College Degree".

Transcript of records
Students that end their education without passing all of the subjects will receive a transcript of records.

4.6 Model of study

4.6.1 Table 1: Overview of subjects, workload and credits

Subject	Workload (hrs.)	ECTS
Mountain Trail Biking history, industry and culture	90	3
Mountain Bike Planning, Design & Management	210	7
Mountain Bike Trail Construction	600	20
SUM	**900**	**30**

4.6.2 Table 2: Distribution of learning activities in the Mountain Bike Trail Building and Maintenance course (full-time/part-time)

Learning activities	Workload in %	
	Full-time	Part-time
Lectures/instruction	25 %	25 %
Field/laboratory work, internship	25 %	25 %
Projects, teamwork, presentations, discussions, tutorials	10 %	10 %
Excursions	5 %	1 %
Self-study	30 %	34 %
Examinations/tests inclusive preparations	5 %	5 %

Teacher-controlled activities amount to 540 hours yearly, which is equivalent to 60% of the total workload.

The goal of the teaching is that each student will experience a high level of achievement of the learning outcomes as they are primarily described, and for each subject. This is achieved through different learning strategies that involve a variation of teaching methods and learning activities.

4.7 Campus-based and online part-time courses

The full-time study and the online-based part-time study have the same closing date for applications and the same starting date.

The full-time study lasts for one semester of the academic year, while the online-based part-time study is for two semesters and lasts one academic years. This means that the full-time study and the online-based part-time study are taught in separate groups and have a course of study independent of each other.
Campus-based and online part-time studies is organised and conducted as described in chapter 4.4.

4.7.1 Table 3: Distribution of learning activities on campus conventions in the online course model

Learning activities per subject	Workload	
	Ca. %	Hours
Lectures/instruction	25 %	8
Field/laboratory work, internship (preparations and finishing work is done at home)	50 %	16
Projects, teamwork, presentations, discussions, tutorials	13 %	4
Excursions	12 %	3
Administrative time		1

4.7.2 Table 4: Overview of subjects, ECTS' and examinations

Subjects	ECTS	Grading system	Examination form
Mountain Trail Biking history, industry and culture	3	Grading scale A – F, were A is best grade and F is failing.	Portfolio assessment.
Mountain Bike Planning, Design & Management	7	Grading scale A – F, were A is best grade and F is failing.	Portfolio assessment.
Mountain Bike Trail Construction	20	Grading scale A – F, were A is best grade and F is failing.	Portfolio assessment. The subject has Main Project Examination.

4.8 Assessment work

The topic plan is to contain a detailed overview of the assessments that are to take place during the learning flow.

The topics will be assessed along the way and at the end in accordance with the portfolio assessment model described in the "Regulation of Admission, Study and Examination at Fagskolen i Viken" §4-3 (which will be referred to as the Regulation from now on). See also the description in "Form of assessment" in the descriptions of the different topics in Chapter 5.

4.8.1 Table 5: Overview of subjects, credits and assessment

Topic	Credits	Assessment	Form of assessment
Mountain Trail Biking history, industry and culture	3	Grading on a scale of A-F where A is the best grade and F is failing the subject.	Portfolio assessment
Mountain Bike Planning, Design & Management	7	Grading on a scale of A-F where A is the best grade and F is failing the subject.	Portfolio assessment
Mountain Bike Trail Construction	20	Grading on a scale of A-F where A is the best grade and F is failing the subject.	Portfolio assessment. The subject has mandatory Main Project Examination.

5 Study content

5.1.1 Table 6: Subjects and themes

Subject	ECTS	Themes
Mountain Trail Biking history, industry and culture	3	• Mountain Biking in the Society
Mountain Bike Planning, Design & Management	7	• Rider Experience • Facility Management • Planning & Design • Presentation of Design • Project Management
Mountain Bike Trail Construction	20	• Construction Management • The Essentials • Construction Techniques • Post Build • Ongoing Management • Internship
Total	30	

The syllabus for the education programme Mountain Bike Trail Building and Maintenance consists of three subjects. The subjects are composed of central themes for the Mountain Bike Trail area. Some of the themes is based upon other to give the students a wide competence in the subject area.

5.1.2 Learning outcomes

Subject code:			
Subject:	Mountain Trail Biking history, industry and culture	**Themes:**	• Mountain Trail Biking history, industry and culture
ECTS:	3		
Workload:	90 hours		

Learning Outcome
Knowledge The candidate knows: • The role of mountain bike culture in a historical and contemporary context • About the industry and what drives the development of mountain bike products • About who the key stakeholders are • About mountain biking's positive influence on health, tourism, local communities • The background, and understand the reasons, for a sustainable development of mountain biking trails and facilities • The challenges regarding unauthorized trails and respective measures **Skills** The candidate is able to: • Explain the mountain biking history and position in the society • Explain the aspects of sustainability and how it affects the mountain biking activity • Find and refer to information and vocational material and assess its relevance to a mountain biking issue • Analyse a situation regarding unauthorized trails and recommend specific measures **Competence** The candidate is responsible for: • Understanding the ethical principles that apply in the mountain biking activity/industry • Application of an ethical attitude in relation to the practising of his/her discipline • Building relations with his/her peers, also across discipline boundaries, and with external target groups • Exchanging points of view with others with or without a background in mountain biking and participate in discussions about the development of good practice • Contributing to organisational development

Content
Mountain trail biking history, industry and culture ● History of trails ● MTB in sports and recreation ● MTB as an industry ● MTB in the society ● Sustainability
Assignments
● Mandatory assignments including essays and documentation of other student works to be added to the portfolio ● The students will be given a thorough feedback on the assignments and the grading pass/fail ● All assignments must be passed to be admitted to examination
Learning activities
● Lectures/ instruction ● Field studies/practical exercises ● Digital work forms ● Projects, teamwork, presentations, discussions, tutorials ● Excursions ● Self-study ● Assignments
Assessment
● Portfolio assessment. The portfolio for assessment must contain documentation of mandatory activities, a log and reflection notes. All mandatory activities must be approved for subject grading to take place. The subject grade is based on the content of the portfolio.
Literature
● TBA

Subject code:			
Subject:	**Mountain Bike Planning, Design & Management**	**Themes:**	• Rider Experience • Facility Management • Planning & Design • Presentation of Design • Project Management
ECTS:	7		
Workload:	210 hours		

Learning Outcome

Knowledge

The candidate knows:

- The customer journey of a mountain biker in recreation and tourism and the respective contribution to the value chain
- The different trail typologies and difficulties and that there could be different approaches in different countries
- The general concepts of Trail User Management
- The general concepts of risk management
- The various types of trail (head) amenities
- The concept and added value of a vision, feasibility study and a masterplan.
- The relevant basics of environmental, legal, and spatial planning factors of all aspects of the trail design process
- About all aspects of the trail construction process
- About trail types, features and construction guidelines
- About trail user types and experience goals
- About concepts, theories, models, processes, and tools that are used in planning, design, and management of mountain biking trail facilities
- can assess his/her own work in relation to the applicable norms and requirements
- About concepts, theories, models, processes, and tools that are used in planning, managing and assessment of a project
- About the different mountain bike disciplines and trails connected to them
- Most common motivational factors for riding

Skills

The candidate is able to:

- Perform a life cycle assessment of a mountain biking trail facility
- Recognize the concepts associated to trail maintenance and how does this maintenance affect risk management
- Recognize how the various types of trail (head) amenities have added value to the trail
- Identify accompanying measures such as visitor guidance, communication and signaling.

- Design a trail in the field, considering the feasibility study/masterplan; the restrictions from environment, legislation and spatial planning, the target group's needs, and the given budget
- Define trail specifications such as difficulty, length, width, import depth, feature size and material quantities.
- Create a documentation with relevant information on trail design and trail specification
- Make calculations (type and quantity of materials needed) per project, based on scope & complexity
- Identify intersections and other critical areas of the trail and present solutions
- Analyse and present geospatial data
- Translate design into (simplified) visualization of the project
- Assess his/her own work in relation to the applicable norms and requirements
- Plan, manage and assess a project

Competence

The candidate is responsible for:

- Planning, design, and management of a mountain bike trail facility alone or as part of a group and in accordance with ethical requirements and principles
- Exchanging points of view with others with a background in the trade/discipline and participating in discussions about the development of good practice
- Contributing to organisational development
- Application and evaluation of relevant literature, theories, policy proposals, and recommendations
- Planning and managing projects alone or as part of a group and in accordance with ethical requirements and principles

Content

Rider Experience

- Target group
- Customer Journey / Value Chain
- Trail Typology
- Trail difficulty grading system

Trail User Management

- Managing mountain bikers
  - Principles of user management
  - Coexistence vs. bike specific facilities
  - Tracking User Numbers
- Information
  - Signage
  - Trail difficulty rating systems
  - Rules of the trail
  - Online communication

- Other management tools
    - Physical installations: fencing/chicanes

Risk Management

- Principles of risk management
    - Legislation
    - Responsibilities
    - Implications for risk management
- Managing risk in mountain biking
    - Plan: Risk analysis
    - Do: Organization and funding
    - Check: Inspection and monitoring
    - Record: Reporting safety work and incidents
    - Act: Ongoing maintenance
    - Emergency Response Plan (Incl. working with local health services)
- Creating awareness
    - Information
    - Trail signage and grading
    - Rules of the trail

Trail head amenities

- Examples: Bike wash, parking, repair, rental, rest zones, food and beverages, uplift service

Facility Management

- Trail User Management
- Risk Management
- Trail (head) amenities

Planning & Design

- Feasibility Study and Masterplan
- Spatial Planning
- Trail Design
- Environment
- Legislation
- Trail specification

Presentation of Design

- Translating design to construction documents
- Presenting the desing to the client / stakeholders
- Micro design inc TTF's
- Post-build processes
- Stakeholder Interface

Marketing/actication

- Product strategy
- Place strategy
- Price strategy
- Promotion strategy
- Market research

- Marketing plans
- Consumerism
- Personal branding

Project Management

- Funding
- Health and safety
- Stages of Project Management
- Contract Management
- Tendering Processes
- Stakeholder management

Subject code:			
Subject:	**Mountain Bike Trail Construction**	**Themes:**	• Construction Management • The Essentials • Construction Techniques • Post Build • Ongoing Management • Internship
ECTS:	20		
Workload:	600 hours		

Learning Outcome

Knowledge

The candidate knows:

- Applicable construction, design, and management regulations
- About concepts, theories, regulations, models, processes, and tools related to HSE (Health Safety and Environment) that are used in mountain bike trail construction
- About concepts, theories, regulations, models, processes, and tools related to the different building techniques that are used in mountain bike trail construction
- About the properties and characteristics of different soil types and how this affects the construction of an MTB trail
- About different contract models (related to build models) and what tasks are best suited for professionals and/or volunteers
- About leadership styles and group dynamics
- About the most common cost items of trail projects (real cost) and payment structures
- About which topics and logistics to address in an operations and management (O&M) plan
- About the fundamental building techniques in creating an MTB trail
- The steps to hand over the trail to the users/owners
- About the various types of equipment and methods for tracking users
- The general procedures and methods associated to the Quality Control of the trail
- The various methods and channels to market an MTB trail operation

Skills

The candidate is able to:

- Plan and conduct HSE instructions
- Assess HSE issues on a construction site
- Apply interpersonal skills, decision making, conflict management, and are capable to define roles and responsibilities
- Make an accurate estimate of project cost
- Adapt an O&M plan to the type of trail facility and the size of a project
- Train local workforce in trail inspection and maintenance
- Apply trail principles and techniques

- Apply vocational knowledge to practical and theoretical problems in Mountain Bike Trail Construction
- Master relevant vocational tools, materials, techniques, and styles in Mountain Bike Trail Construction
- Find information and material that is relevant to a vocational problem
- Study a situation and identify subject-related issues and what measures need to be implemented
- Develop a guidance document that secures a safe hand over process
- Inspect and maintain different types of mountain bike trails
- Execute the recording of the Health & Safety Plan
- Correlate the user numbers to the quality control

Competence

The candidate is responsible for:

- Assessing his/her own work in relation to the applicable norms and requirements
- Applying different leadership styles and create positive group dynamic and safe learning environment
- Planning, design, and management of a mountain bike trail construction project alone or as part of a group and in accordance with ethical requirements and principles and the needs of selected target groups
- Applying essential trail principles appropriately and safely with consideration for site specific factors and desired outcomes
- Understanding and communicating the connection between inspection and maintenance and safety protocol to both professionals and volunteers
- Understanding the ethical principles that apply in the trade/ field of work
- Having an ethical attitude in relation to the practising of his/her discipline
- Building relations with his/her peers, also across discipline boundaries, and with external target groups
- Developing work methods of relevance to practising Mountain Bike Trail Construction
- Analysing the user numbers and adapt the marketing strategy accordingly

Content

Construction Management

- Health and Safety on Site
- Contract Management
- Leadership & Group Dynamics
- Budget Planning
- Developing the Operations and Maintenance Plan
- Handover Processes

The Essentials - Trail Elements

- Drainage

- Entry/Exit points & Fall zones
- Flow, fun & play
- Terrain dynamics
- Materials
- Speed management
- Adaptive Bike Guidance
- Revegetation and protection of the vegetations
- Corridor Clearing
- Trail Compaction
- Overview of the different Tools & Machinery and their uses

Construction Techniques

- Adoption / adaption of existing trail (walker/hiker etc)
- Rake and Ride
  - Flag the trail corridor
  - Clear the corridor (brashing trees, removing trail debris)
  - Removing the top soil
  - Technicality of the trail
  - Berms (catch)
  - Trail compaction
  - Water management (trail flow)
  - Fall zones
  - Exit point(s)

- Hand Built
  - Flag the trail corridor
  - Clear the corridor (consider width and depth of trail)
  - Roughing the trail out – bench cut vs fall line
  - Additional or different soil/material required (sourcing stones, logs/trees(?) and 'borrow' pits)
  - Technicality of trail – meeting user expectation
  - Trail features (berms, drops, steepness, rocks/rock gardens)
  - Adaptive trail bikes – consider their needs
  - Water management (trail flow, pipes – culverts, ambush drains)
  - Trail compaction (shovels, macleods)
  - Fall zones
  - Exit and entry point(s)

- Machine Built
  - Flag the trail corridor
  - Clear the corridor (consider tree & boulder removal)
  - Fall zones
  - Water management (trail flow, ditches, pipes – culverts, ditch intercepts, ambush drains, French drains, cut off drain, cross drains)
  - Trail structure (formation, base, top layer/finish)

Post Build

- Maintenance

- Inspection

Ongoing Management

- Health & Safety Recording
- Tracking user numbers and engagement
- Quality control
- Marketing / Activation

Internship

During the study period the students will have a mandatory internship of two weeks. In the internship, the students will do productive work in an MTB trail construction company. During their stay, they will carry out a learning project which will be documented, this can constitute the base for the mandatory examination project. The placement framework will be defined by an agreement between the school and the company, and the student will be informed by a work placement guidance document. During the stay, the student will be given guidance and followed up by the company and the school.

6 Appendix

6.1 Computer specifications

The students are required to use their own laptop computer to be used both at school and at home and it is to be brought to school on the first day of the course. We have WIFI in the whole building. During the course, we use programs that necessitate a modern, fast computer.

Requirements for the PC (recommendations)

- Minimum 15-inch screen
- 64-bit operating system (Windows 10)
- CPU: 2,5 GHz
- GB DDR3 RAM
- VGA or HDMI output
- WIFI
- Hard disk capacity: Minimum 500 GB
- Numeric keyboard

Extra equipment (recommended):

- USB flash drive
- Computer mouse
- Only Windows-based computers, due to specialised programs!

6.2 Required PC programs

The student must obtain these programs:

- MS Office 365

As a student, you may install Office 365 free of charge (only Word, Excel, Powerpoint and Outlook). Installation may be done at the start of the semester.

Information about other specialised PC programs will be given at the start of the semester.

The information given is subject to change.

6.3 Examination types at Fagskolen i Viken

Written examination

The written examination is to be handed in after 5 hours, but the students may be allowed extra time pursuant to §5-4 in the Regulation "Regulation of Admission, Study and Examination at Fagskolen i Viken" (from now on referred to as the Regulation). Allowed resources are defined by each individual topic.

Assessment: Grading on a scale of A-F, where A is the best grade and F is failing the subject.

Written combined examination

The examination will last for three days, and will be arranged as follows:
Three days will be given for planning and production. The production part will be handed out at 9:00 am on the first day and it must be handed back in by 3:00 pm the following day.
On the third and last day there will be an interdisciplinary documentation part, which is a written test.

Assessment: Grading on a scale of A-F, where A is the best grade and F is failing the subject.

Oral combined examination

The examination will last for three days, as follows:

- Two days will be given for planning and production. The production part will be handed out at 9:00 am on the first day and must be handed back in by 3:00 pm the following day.
- On the third and last day there will be an oral hearing, based on the production part.

Assessment: Grading on a scale of A-F, where A is the best grade and F is failing the subject.

Interdisciplinary examination in the MEM subjects

The subject that comprises the three MEM subjects (Organisation and Management, Marketing Management and Cost Control) will be completed with an interdisciplinary examination, pursuant to §5-1 in the Regulation. This will constitute a part of the master training in the specific master certificate subjects.

The examination will last for three days, as follows:

- Two days will be given for planning and production. The production part will be handed out at 9:00am on the first day and must be handed back in by 3:00 pm on the following day.
- On the third and last day there will be a written examination based on the interdisciplinary production part.

Assessment: Grading on a scale of A-F, where A is the best grade and F is failing the subject.

Main Project Examination

The Main Project is concluded with an interdisciplinary project examination, which consists of an individual summary memo and an oral examination. An aggregate grade is given.

The grade is determined based on:

- A written part, a summary memo from the project phase
- An oral part, a discussion with the external examiner and the subject teacher based on the project report and the summary memo.

Assessment: Grading on a scale of A-F, where A is the best grade and F is failing the subject.

Subject assignment
The examination consists of a course assignment.

The course assignment should include:

- An introduction
- Theory part
- Analysis/ethics reflection
- Conclusion/closing remarks
- Bibliography
- Attachments
- Reflection notes

Assessment: Grading on a scale of A-F, where A is the best grade and F is failing.