# Integrated Python-Git Framework (IPGF) survey

## Scales

Likert 5 points (L5P)

Strongly disagree (1) - Disagree (2) – Neither agree nor disagree (3) - Agree (4) - Strongly Agree (5)

## Survey items

A. Pre- & Post-test

1. I like programming. [3] (Intrinsic motivation)
2. Programming is interesting. [3] (Intrinsic motivation)
3. I would like to continue learning programming in the future. [3] (Intrinsic or extrinsic value)
4. I would like more programming teaching in the next year. [3,7] (Intrinsic or extrinsic value)
5. Programming is hard. [3] (Self-efficacy)
6. Programming concepts and syntax are difficult for me to learn. [6] (Self-efficacy)
7. I am confident that I could learn a new programming skill. [1] (Self-efficacy)
8. Programming makes me feel more like a geophysicist. (Belonging)
9. Collaborating in coding activities makes me feel more like a geophysicist. (Belonging)

B. Reflection on experience with IPGF

1. When I first started with the IPGF, I had troubles figuring out how to use it. [4] (Cost start)
2. I enjoyed using the IPGF during coding. [2] (General)
3. I valued learning about the IPGF. (General)
4. Using the IPGF makes me more eager to keep coding regularly. (Python)
5. How confident are you in your ability to use the IPGF to code? [1] (Python)
6. The IPGF made it easy to keep track of changes in documents. [4] (Git)
7. The IPGF made it easy to share all kinds of documents. [4] (Git)
8. The IPGF is great for working on group projects? [1] (Collaboration)
9. The IPGF made it easy to collaborate on code with my peers. (Collaboration)
10. After some experience with the IPGF, it has become much easier to use. (Cost finish)

## Research questions

1. How do students problem-solving abilities differ using the IPGF from using regular Jupyter notebooks via mitt.uib? [2]
2. What are the students’ perceptions about using the IPGF, and its effect on their programming abilities? [2]
3. Does the use of the IPGF enhance collaboration, programming fluency and motivation to code for the students?

Git-specific questions

Python-programming questions

Programming relevance questions

Expectancy – Value – Cost (motivation theory)

A(daptive)C(ontrol of)T(hought)-R(ational)

1. How confident are you in your ability to find documentation to help you coding? [1]
2. How confident are you in your ability to troubleshoot code and solve coding issues?
3. How would you rate the advantages of version control over a classical system?
4. The IPGF helped me understanding how to code. [2,7]
5. The IPGF made it easy to look at past code when writing new ones. [4]
6. The IPGF helped me become a better problem-solver. [2,7] (Python)
7. I learned critical-thinking skills related to scientific programming through the IPGF. [5]
8. I had an overall positive experience with the IPGF. [5]
9. Being challenged while coding feels constructive and motivating.
10. How confident are you in your ability to collaborate with your peers during coding?
11. The IPGF made it easy to retrieve code from my peers. (Git)
12. How confident are you in your ability to introduce someone else to the IPGF?

## References

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# Vegard’s stuff: Python programming in physics

## Research questions:

1. Ønsker studentene mer programmering?
2. Ville studentene vært skuffet hvis de programmeringsaktivitetene ble fjernet?
3. Hvordan er utviklingen i mestringsforventninger knyttet til programmering?
4. Hvordan er utviklingen i mestringsfølelse knyttet til programmering?
5. Hvordan er utviklingen i autonomifølelse knyttet til programmering?
6. Hvordan er utviklingen i følt verdi knyttet til programmering?
7. Hvordan er utviklingen i følt kostnad knyttet til programmering?
8. Hvordan er følelsen av næringslivsrelevans for fysikkprogrammet?
9. Hvor klar føler de seg for arbeidslivet? I hvilken grad mangler programmeringskunnskap?
10. Hvor klar føler de seg for mastergrad? I hvilken grad mangler programmeringskunnskap?
11. Hvordan påvirker programmering følelsen av arbeidslivsrelevans?
12. Føler de at de får nok støtte til å lære programmering i fysikkbacheloren?
13. Hvor skuffet ville de vært hvis de mistet tilgangen til:
    * Anki deck
    * Programmeringsøvelsene i kurs

## Likert scale (1-5):

Completely disagree – somewhat disagree – neither agree nor disagree – somewhat agree – completely agree

## Likert scale (1-3) for disappointment:

Hvor skuffet ville du vært om du mistet tilgangen til <…>:

Ikke skuffet – Litt skuffet – Svært skuffet

## Scales and questions:

**Mestringsforventning programmering (self-efficacy) (endre til mestr.forv. For prog I arbeidslivet? Generelt for programmering?)**

1. Jeg tror at jeg kan klare alle programmeringsøvelser i fysikkemnene
2. Jeg er sikker på at jeg kan forstå de vanskeligste delene programmeringsøvelsene i fysikk
3. Jeg er sikker på at jeg kan lære de fleste programmeringsmetodene som brukes i fysikk

**Mestringsfølelse (perceived competence)**

1. Jeg synes jeg er god til å programmere i fysikk.
2. Programmeringsøvelsene I fysikkprogrammet har gitt meg mestringsfølelse
3. Jeg har fått til de fleste programmeringsøvelsene i fysikkprogrammet.
4. Jeg har forstått de fleste programmeringsøvelsene i fysikkprogrammet.

**Indre motivasjon (intrinsic motivation)**

1. Jeg synes at programmering i fysikk er interessant
2. Jeg synes det er veldig gøy å lære programmering i fysikk
3. Jeg kan bli så engasjert at jeg glemmer tiden når jeg programmerer i fysikkemnene.
4. Programmering i fysikk er veldig spennende
5. Jeg er veldig interessert i å lære nye programmeringsmetoder i fysikk

**Verdi/ytre motivasjon (value/extrinsic motivation)**

1. Programmeringen vi gjør i fysikk vil gi meg en fordel på arbeidsmarkedet
2. Det jeg lærer av programmering i fysikk er veldig nyttig for meg i fremtiden
3. Å programmere i fysikk vil gi hjelpe meg å få akkurat det yrket jeg ønsker meg
4. Å programmere i fysikk vil gi jobbmuligheter som er attraktive for meg
5. Det jeg lærer av programmering i fysikk er veldig nyttig for meg videre i utdannelsen

**Kostnad (cost)**

1. Å lære seg programmering i fysikk er svært tidkrevende
2. Å lære seg programmering i fysikk er veldig slitsomt
3. Arbeidet med programmering i fysikk krever for mye tid

**Relevans for arbeidsliv og mastergrad**

1. Jeg synes fysikkprogrammet gjør meg klar for næringslivet
2. Jeg synes fysikkprogrammet har høy relevans for arbeidslivet
3. Jeg synes fysikkprogrammet gjør meg klar for mastergrad

**Skuffelse ved fjerning:**

1. Anki
2. Programmeringsøvelser

**Div/Evaluering**

1. Fysikkprogrammet har gjort meg flinkere til å programmere.
2. Jeg har lært mye programmering i løpet av fysikkprogrammet.
3. Fysikkprogrammet har vært godt tilrettelagt for at jeg skal lære meg å programmere.
4. Programmering har gjort meg flinkere i fysikk.
5. Jeg ønsker mer programmering i fysikkprogrammet.
6. Jeg synes opplegget for programmering i fysikkprogrammet/fag har vært bra.

**Autonomitilfredsstillelse og -frustrasjon**

* Jeg opplever en følelse av valg og frihet i ting jeg foretar meg i Phys111
* Jeg føler at mine valg reflekterer hva jeg virkelig ønsker
* Jeg føler at mine valg uttrykker hvem jeg virkelig er
* Jeg føler jeg har gjort det som virkelig interesserer meg i Phys111
* De fleste ting jeg gjør føles påtvunget
* Jeg føler meg tvunget til å gjøre mange ting jeg ikke ville valgt å gjøre selv
* Jeg føler meg presset til å gjøre for mange ting i Phys111
* Mine daglige aktiviteter føles som en rekke av forpliktelser
* Jeg føler at underviserne gir meg valg og muligheter
* Jeg føler meg forstått av underviserne mine i Phys111
* Underviserne mine viser tillit til at jeg kan gjøre det bra i faget
* Underviserne mine oppmuntrer meg til å stille spørsmål
* Underviserne mine lytter til hvordan jeg har lyst til å gjøre ting
* Underviserne mine prøver å skjønne hvordan jeg forstår ting før han/hun foreslår en ny måte å gjøre ting på

A. Pre- & Post-course

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8. Programming makes me feel more like a geophysicist. (Belonging)
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10. I believe that programming skills will be beneficial for my future career. (Perceived utility)

B. Post-course Reflection on experience with IPGF

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