



A new advanced educational programme in geospatial information

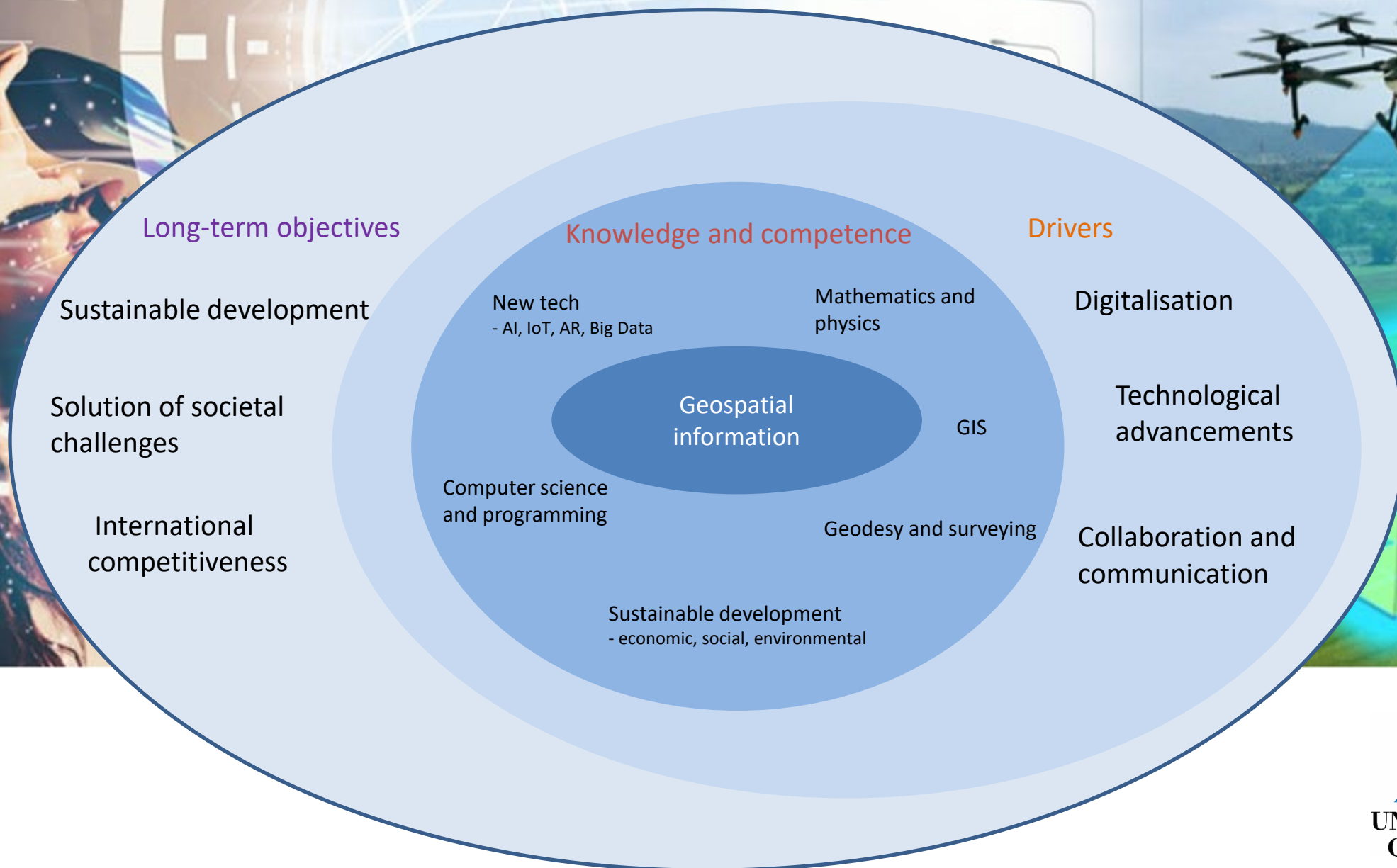
Jonas Ågren

Introduction



- A new study programme for a master of engineering in land surveying concentrating on collection, handling, analysis and visualisation of geospatial information
- 5-year full-time studies (300 credits)
- Start at bachelor level, final degree at the master level (Degree of Master of Science in Engineering, “civilingenjörsexamen” in Swedish)
- Programme launched in autumn 2020
- Current number of students: 13 in year one, 10 in year two
 - Long term goal: 30 students per year (or more)
 - A challenge to recruit students
- Programme is unique in Sweden
- Programme managers are Fredrik Zetterquist and Jonas Ågren
- More information at https://hig.se/TACIM_en

Programme context



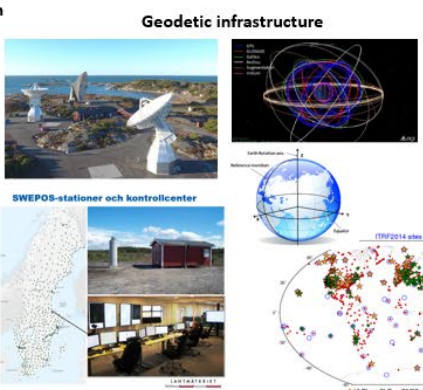
Curriculum overview

	Specialisation	Autumn semester		Spring semester	
		Period 1	Period 2	Period 3	Period 4
Year 1	Common	Spatial planning and land development	Linear algebra	Computer systems and programming	Geodetic measurements and calculations
		Data analysis and statistics	Cartography and GIS		Cartography and CAD
Year 2	Common	GIS-analysis	Single variable calculus	Open source cartography	Multiple variable calculus
		Applied programming	Basic application development for GIS	Optics and physics of waves	Organisation and project management
Year 3	Surveying and geospatial information	Earth science and geotechnology	Mathematical statistics	Geodetic uncertainty analysis	Project course
		Real property and land use	Construction technology and engineering surveying	Laser scanning	
	GIS	Earth science and geotechnology	Mathematical statistics	Algorithms and data structures for GIS	Project course
		Object-oriented design and programming	SDI and service-oriented GIS architectures	GIS-programming for web and smartphones	
Year 4	Surveying and geospatial information	Geodetic infrastructure	Decision-, risk- and policy analysis I	Photogrammetry	Remote sensing
		Linear and time series analysis	Technical systems in a sustainable Society	Geodetic deformation surveillance	Sustainable urban development
	GIS	Advanced application development for GIS	Decision-, risk- and policy analysis I	Advanced geospatial data analysis	Remote sensing
			Technical systems in a sustainable Society		Sustainable urban development
Åk 5	Surveying and geospatial information	Decision-, risk- and policy analysis II	Management for sustainable development of society	Master thesis	
		Physical geodesy	Scientific method and writing		
	GIS	Advanced geospatial data visualisation	Management for sustainable development of society	Master thesis	
			Scientific method and writing		

	Credits
Data collection, geodesy and surveying	67,5 cr / 15 cr
GIS, application development and visualisation	37,5 cr / 105 cr
Mathematics, physics and geo-science	60 cr / 52,5 cr
Programming and computer science	22,5 cr / 30 cr
Sustainable development	30 cr / 22,5 cr
Management, organisation and decision theory	30 cr / 22,5 cr
Master thesis, project work and scientific method	52,5 cr / 52,5 cr

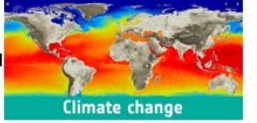
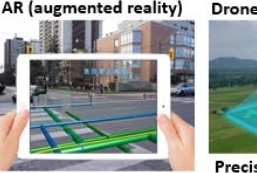
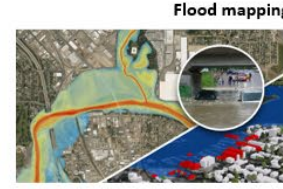
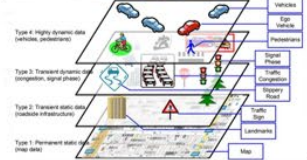
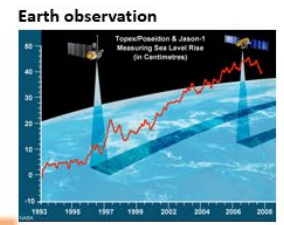
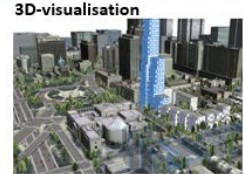
Geospatial information – a broad field of applications

Societal benefits



Advanced knowledge and competence in:

- Geospatial information science
- Geodesy and surveying
- GIS and application development
- Computer science and programming
- Application of new tech
- Sustainable development



Agenda 2030

1. No Poverty	2. Zero Hunger	3. Good Health and Well-being	4. Quality Education	5. Gender Equality	6. Clean Water and Sanitation
7. Affordable and Clean Energy	8. Decent Work and Economic Growth	9. Industry, Innovation and Infrastructure	10. Reduced Inequalities	11. Sustainable Cities and Communities	12. Responsible Consumption and Production
13. Climate Action	14. Life Below Water	15. Life on Land	16. Peace, Justice and Strong Institutions	17. Partnerships for the Goals	Sustainable Development Goals

Source: The United Nations

UN resolution: A global geodetic reference frame for sustainable development
 Integrated Geographic Information Framework (IGIF)
 A strategic guide to develop and strengthen national geospatial information management



Innovation and entrepreneurship

Collaboration and global development



On-going development work

- Develop the programme and courses
- Establish long-term collaboration with public and private actors (e.g. in the KKS-Avans project)
- Create students' culture and programme identity
- Marketing and recruitment of students
- Currently recovering after the Corona pandemic
- Future: Internationalisation? 3+2 years? More distance learning?





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