

RSGIS - Important and Necessary Guidance

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Credit Requirements:

*Students should consult their advisor prior to enrolling their courses and are required to take at least 9 credits of coursework during the semester. **The student enrolled under Bridging Program is allowed to take only 9 credits, for the first semester.***

No student may enroll for more than 15 credit in a semester or more than 9 credits in an Inter-semester, unless special permission is obtained.

Required course for Master Program (9 credits) are:

AT76.01: Geographic Information systems, 3(2-3) credits

AT76.03: Remote Sensing, 3(2-3) credits

AT76.09: Digital Image Processing in Remote Sensing, 3(2-3) credits

*** No required course for Doctoral Program.**

Doctoral Program

AIT Master Graduate	
Coursework	12 credits *
Dissertation	72 credits
Total	84 credits

Non-AIT Master Graduate	
Coursework	12 credits *
Dissertation	72 credits
Total	84 credits

* A doctoral candidate while enrolled in the doctoral program can earn a maximum of 6 credits from special study to satisfactorily complete the minimum course credit requirements. For those students who obtained their Master's degree elsewhere, special study may be taken but these credits should be on top of the minimum 18 credits from regular courses.

Master Program

Thesis Option	
Required course	9 credits
Elective course	17 credits **
Thesis	22 credits
Total	48 credits

Research Option	
Required course	9 credits
Elective course	29 credits **
Research Study	10 credits
Total	48 credits

** A Master's student may earn a maximum of 6 credits to satisfactorily complete the Elective course credit requirements.

Diploma Program

- ❖ The Diploma student must complete a minimum of 24 credits coursework including 2 to 6 credits from special study leading to a presentation of a project report.

Certificate Program

- ❖ *The certificate program student is recommended to take a minimum of 9 credits of coursework and is recommended as a trial program for students who seek the transfer to a master's program if they obtain satisfactory GPA.*

Class and Lab attendance

Student is expected to attend classes / lab regularly and is responsible for all assigned work, whether present or absent. The grade for an examination from which the student is absent will be "F" unless the course instructor accepts the reason for the absence and is willing to give a make-up examination.

Minimum Grade Requirements

Doctoral Program:

- ❖ Student must maintain a cumulative grade point average of not less than **3.50** for continuation of the program and for graduation.

Master and Diploma Program:

- ❖ Student must maintain a cumulative grade point average of not less than **2.75** for continuation of the program and for graduation.

Certificate Program

- ❖ There is no minimum cumulative GPA requirement for the award of Certificate of Attendance.

IMPORTANT NOTES:

Student MUST repeat a required course if the grade awarded was not considered satisfactory (grade "D" or "F"). The repeating courses will be charged at the standard rate per credit hour.

The Students who failed to attain the minimum grade requirement at the end of the semester will either be placed on probation or be recommended for dismissal.

A student on probation for more than two semesters faces dismissal.

English Requirement

An AWPT score of 6 (or LC approved equivalent), or satisfactory completion of EL19 (Pass) should be attained by the end of the second semester. Student must meet the English requirement (6.0) before Graduation (Academic Senate: 29 July, 2021).

Leave of Absence

- ❖ For reason other than sickness, any student who will be absent from the academic commitments during the semester or who will be traveling outside Thailand of vacation/ Data collection / etc. **must seek approval (*in advance*)* from the Adviser and the Academic Degree Program Chair.**
- ❖ On return from leave, student must report to the school and registry.
- ❖ ***Students absent from the Institute without formal approval of leave will be suspended, and may subsequently be dismissed.***
- ❖ Leave form could be download from <http://rsgis.ait.ac.th/main/current-students/>

Do and Don't in Laboratory

1. Do not smoke, eat or drink (except water) in the lab
2. Do not install / modify /or overwrite any software or file on your own
3. Reduce your voice while talking in the Lab
4. Operating the equipment and devices with respect and care
5. Before beginning to work, you should familiar with the program you be working
6. After remove the equipment or its accessory, keep back at its proper place.
7. Always log off the computer when you finished working.
8. If you are the last one in the Lab, switch off the air conditioner and turn off the light before leaving
9. Always keep our Lab clean and tidy.
10. Report to Laboratory Manager (Dr. Sanit) if you find equipment's and devices is out of order or when you break something.

Remote Sensing and Geographic Information Systems
School of Engineering and Technology
Asian Institute of Technology, Thailand

Courses to be offered

Course Code	List of Courses/ Semester	Credits	Course Instructor(s)	Remarks
1st Semester (August - December)				
AT76.01	<i>Geographic Information Systems (GIS)</i>	3(2-3)	Prof. Nitin K. Tripathi	Required course
AT76.03	<i>Remote Sensing</i>	3(2-3)	Dr. Salvatore Virdis	Required course
AT76.14	Digital Photogrammetry	2(1-3)	Visiting Faculty	Elective course
AT76.22	Web GIS Technology	2(1-3)	Dr. Sarawut Ninsawat	Elective course
AT76.24	Introduction to Spatial information Engineering	1(1-0)	Dr. Apichon Witayangkurn	Elective course
AT76.25	Aerospace Technology	2(2-0)	Visiting Faculty	Elective course
AT76.28	Principles and Application of InSAR	1(1-0)	Dr. Salvatore Virdis	Elective course
AT79.29	Positioning and Location-Based Services Technology	1(1-0)	Dr. Sarawut Ninsawat	Elective course
AT76.9029	Introduction to Global Navigation Satellite Systems	1(1-0)	Dr. Hiroyuki Miyazaki	Selected Topic
2nd Semester (January – May)				
AT76.01	<i>Geographic Information Systems (GIS)</i>	3(2-3)	Prof. Nitin K. Tripathi	Required course
AT76.03	<i>Remote Sensing</i>	3(2-3)	Dr. Salvatore Virdis	Required course
AT76.09	<i>Digital Image Processing in Remote Sensing</i>	3(2-3)	Dr. Sarawut Ninsawat	Required course
AT76.15	Microwave Remote Sensing	2(2-0)	Visiting Faculty	Elective course
AT76.18	Advance Mapping Techniques	2(2-0)	Dr. Hiroyuki Miyazaki	Elective course
AT76.19	Advance Spatial Analysis Methods	3(2-3)	Prof. Nitin K. Tripathi	Elective course
AT76.21	Data Modeling for Geospatial Information	1(1-0)	Dr. Hiroyuki Miyazaki	Elective course
AT76.27	Geospatial Modelling for Environment	2(1-3)	Dr. Chitrini Mozumder	Elective course
AT76.30	Unmanned Aerial Vehicle Application and Processing	1(1-0)	Dr. Sarawut Ninsawat	Elective course
AT76.31	Research Methodology in Geoinformatics	1(1-0)	Dr. Chitrini Mozumder	Elective course
AT76.9039	Spacecraft Dynamics and Control	1(1-0)	Visiting Faculty	Selected Topic
Inter Semester (June – July)				
AT76.13	Remote Sensing Data Analysis	2(1-3)	Dr. Salvatore G.P. Virdis	Elective course
AT76.23	Free and Open Source Software and for Geospatial Analysis	2(1-3)	Dr. Sarawut Ninsawat	Elective course
AT76.26	Geospatial Data Processing and Management	2(1-3)	Dr. Apichon Witayangkurn	Elective course
AT76.20	GIS Programming and Modeling	3(2-3)	Prof. Nitin K. Tripathi	Elective course
3rd , 4th Semester (August – May)				
AT61.01xx	Master Thesis	1-22	Instructor	Thesis course
AT61.02xx	Master Research Study	1-10	Instructor	Research Study
Completed 26 Credits of coursework and 22 credits of Master Thesis				
Completed 38 Credits of coursework and 10 credits of Research Study				

Asian Institute of Technology
School of Engineering and Technology
Remote Sensing and Geographic Information Systems

AT76.01 Geographic Information Systems 3 (2-3)

Semester: August/January

Course Objective: This course aims at introducing concept, principles and applications of Geographic Information Systems (GIS). Course also aims to develop the skill of using software and other tools of GIS in students.



Prerequisite: None

AT76.03 Remote Sensing 3 (2-3)

Semester: August/ January

Course Objective: This course provides students foundations of Remote Sensing (RS) theory, RS image processing techniques and applications. Specific objectives of this course are: i) to provide background knowledge and understanding of principles of RS and RS systems; ii) to enhance students' capacity to interpret images and extract information on the earth surface from multi-resolution imagery at multi-scale level; iii) to acquire skills on basic image processing and classification techniques; iv) to enable critical, spatial and temporal thinking on Remote Sensing for real-world applications.



Prerequisite: None

AT76.09 Digital Image Processing in Remote Sensing 3(2-3)

Semester: January

Course Objective: The objective of this course aims at providing students with knowledge and in-depth understanding of techniques in digital image processing for remote sensing data analysis. This course emphasizes on implementation of algorithms as computer programs. The techniques taught in this course have application in several fields dealing with image data.



Prerequisite: AT76.03

AT76.13 Remote Sensing Data Analysis 2 (1-3)

Semester: Intersem

Course Objective: This course aims at providing practical knowledge and in-depth understanding of the Remote Sensing. Through practical applications and real-world examples, students will be provided with necessary skills to generate and analyze high-level remote sensing products.

Specific objectives are: i) to train students on remote sensing data type and formats, imagery products and their availability; ii) to give insights on processing methods and techniques for handling radiometric and geometric properties of remotely sensed; iii) to give principles and methods of multi-resolutions and multi-spectral data fusion, multi-temporal processing and accuracy assessment; iv) to develop data processing automation through batch processing.



Prerequisite: AT76.03 Remote Sensing

AT76.14 Digital Photogrammetry 2 (1--3)

Semester: August

Course Objective: The course conveys the basics of terrestrial and satellite digital photogrammetry. It aims at providing basic photogrammetry concept, procedures and processing task. Insights on products quality and error analysis are also considered and explained with various methods. Basic concepts of terrestrial and aerial laser scanning will be also given.



Pre-requisite: None

AT76.15 Microwave Remote Sensing 2 (2-0)

Semester: January

Course Objective: This course is designed to provide fundamental knowledge and theories of microwave remote sensing. The fundamentals of electromagnetics, both real aperture and synthetic aperture radar systems will be introduced including physical principles.



Prerequisite: None

AT76.18 Advance Mapping Techniques 2(2-0)

Semester: January

Course Objective: The objective of this course aims at providing knowledge and understandings of the RS/GIS and Computer Mapping Technology (CMT). It also provides more in-depth knowledge and skills for applications of the technologies and relevant service innovations.



Pre-requisite: None

AT76.19 Advance Spatial Analysis Methods 3 (2 - 3)

Semester: January

Course Objective: This course aims at providing advance knowledge in discrete and continuous spatial data understanding and analysis. Students will also be exposed to advance modeling techniques, exploratory spatial data analysis, interpolation techniques, terrain modeling, and geostatistical analysis.



Pre-requisite: AT76.01 Geographic Information Systems

AT76.20 GIS Programming and Modeling 3 (2 - 3)

Semester: Intersem

Course Objective: This course aims at providing advance knowledge in spatial data understanding, analysis and programming skill in GIS environment. Students will also be exposed to advance geoprocessing and modeling techniques, exploratory geostatistical analysis and spatial data analysis to impart advance knowledge of programming, customization and automation in GIS.



Pre-requisite: AT76.01 Geographic Information Systems

AT76.21 Data Modeling for Geospatial Information 1(1-0)

Semester: January

Course Objective: This course imparts knowledge about Data Modeling for Geospatial Information. It also aims to prepare students for more in-depth training in understanding what model and modeling is, what object orientation and UML is, how to describe UML diagram, and what ISO and OGC standard is.



Pre-requisite: None

AT76.22 Web GIS Technology 2(1-3)

Semester: August

Course Objective: The objective of this course aims at providing students with knowledge and understanding about Web GIS technology. The client and server architecture of Web GIS will be taught as well.



Prerequisite: None

AT76.23 Free and Open Source Software and for Geospatial Analysis 2(1-3) Semester: Intersem

Course Objective: The objective of this course aims at providing students with practical utilization of Free and Open Source Software (FOSS) for data manipulation, management and analysis of remote sensing images and GIS data. Students will be trained to able to use and integrate FOSS to make comprehensive system which provides powerful functionalities at very affordable cost.



Prerequisite: None

AT76.24 Introduction to Spatial Information Engineering 1(1-0)

Semester: August

Course Objective: The objective of this course aims at providing basic introduction and concept of spatial information engineering with an insight into both academic knowledge and practical skills at the entry level. It also addresses the basic and history of geospatial information, location-based service, GNSS, space technology and IoT.



Pre-requisite: None

AT76.25 Aerospace Technology 2(2-0)

Semester: August

Course Objective: The objective of this course is to give a general concept of aerospace technology and its applications through knowledge and understanding of systems engineering, project management, and orbital mechanics. Students will obtain fundamental techniques necessary for the development of large systems and will be able to identify the applicability of satellites from the operational view point.



Prerequisite: Calculus and basic physics

AT76.26 Geospatial Data Processing and Management 2(1-3)

Semester: Intersem

Course Objective: The objective of this course aims to provide the fundamentals of spatial data processing and analysis, including data pre-processing, exploration of data input, visualization and manipulation, Software customization and development. It also addresses the basis of data processing using spatial databases both in database design, implementation and management.



Prerequisite: None

AT76.27 Geospatial Modeling for Environment 2 (1-3)

Semester: January

Course Objective: This course aims at providing students with ideas of Geospatial Modeling on environmental issues including sustainable development and ecosystem management from community scale to global, as well as basic practical skills to develop geospatial models for the purpose.



Prerequisite: None

AT76.28 Principles and Application of InSAR 1(1-0)

Semester: August

Course Objective: The objectives of this course are: i) to provide background knowledge and understanding of principles of InSAR; iii) to acquire skills on basic InSAR and DInSAR image processing and analysis as well as basic knowledge on main limitations and error sources of these techniques; iv) to enable critical, spatial and temporal thinking on InSAR for real-world applications.



Prerequisite: None

AT76.29 Positioning and Location-Based Services Technology 1(1-0)

Semester: August

Course Objective: The objective of this course aims at providing students with knowledge and understanding about Location-Based Services (LBSs) technology. The fundamentals and operation of LBSs will be taught to obtain an understanding of its systems and methods. The key technology of various positioning method will be trained. Additionally, the course will also cover related technologies of Indoor Positioning, Augmented Reality and navigation systems



Prerequisite: None

AT76.30 Unmanned Aerial Vehicle Applications and Processing 1(1-0)

Semester: January

Course Objective: The objective of this course aims at providing students with knowledge and understanding about Unmanned Aerial Vehicle (UAV) technology. Additionally, students will learn how UAV are utilized in earth observation, agriculture and 3D mapping.



Prerequisite: None

AT76.31 Research Methodology in Geoinformatics 1 (1-0)

Semester: January

Course Objective: The objective of this course is to prepare the student for their research at AIT in Geoinformatics and to develop statistical skills. Students will be introduced with research methods and steps in research design relevant to Geoinformatics research. The course will cover scientific reading and writing, including proposal and thesis writing in AIT. Additionally, the objective is also to introduce statistical methods for analyzing spatial and non-spatial data.



Prerequisite: None

AT76.9029 Introduction to Global Navigation Satellite Systems 1(1-0)

Semester: August

Course Objective: The aim of this course is to introduce the principles of the Global Navigation Satellite Systems (GNSS), Satellite Positioning, GNSS Signal Structures and to demonstrate its applications to various aspects of location-based services and geospatial sciences.



Pre-requisite: None

AT76.9039 Spacecraft Dynamics and Control 1(1-0)

Semester: January

Course Objective: This course provides the principles of spacecraft dynamics and basic control technics of spin-stabilized satellites. It includes fundamental mathematics and dynamics which are necessary to understand the spacecraft's behavior in space. The objectives of this course are to give a basic working knowledge of vector algebra and matrices as well as the rigid-body dynamics and control theory.



Prerequisite: None

More detail, please visit: <https://rsgis.ait.ac.th/main/academic/courses/>

RSGIS Individual Study Plan (Master Program)

Student Name: _____ ID: _____ Advisor: _____

Option plan Thesis Research Study

1st Semester	Course Code	Course Title	No. Credit	Remark
		Total Credit		
2nd Semester	Course Code	Course Title	No. Credit	Remark
		Total Credit		
Inter Semester	Course Code	Course Title	No. Credit	Remark
		Total Credit		
3rd Semester	Course Code	Course Title	No. Credit	Remark
		Total Credit		
4th Semester	Course Code	Course Title	No. Credit	Remark
		Total Credit		
Total Plan				

Student signature: _____ Date prepared/ submitted: _____

Advisor's approval: _____ Endorsed by APC : _____