

# University Education for Land Tenure Development

Hans MATTSSON, Sweden

**Key words:** land tenure education, land administration education, surveying profession.

## SUMMARY

Ever since 1996, the Unit of Real Estate Planning and Land Law at KTH (Royal Institute of Technology) has with support of Swedish International Development Cooperation Agency (Sida) been instructing students in property law and property economics under a Master's programme in Land Management. This has been a programme of 1½ years duration, rising in 2007 to two years. The students, totalling about 400 up till now, have been recruited from the civil service and universities, the qualifications for admission being an appropriate basic degree and a relevant employment sector position for becoming an adviser, policy-maker, full-time or part-time university teacher etc. Initially 30 students from the Baltic states, Russia, Belarus and Ukraine were trained annually. The Baltic states have been phased out and other countries gradually substituted, at the same time as the student intake has been increased. At present there are 60 students from 17 countries in former Soviet republics, the Balkans and East Africa.

The primary aim of the study programme, however, is not to teach students but to support the administrations of the countries concerned, where the students will serve as advisers and policy-makers, and also as catalysts for the long-term build-up of university Land Management/Administration study programmes. University representatives have been able to see the usefulness of students who have been in Sweden and their insight into the administration of real estate. A number of universities have therefore entered university support projects aimed, with support from KTH, at changing existing surveying/cadastral study programmes or building up new ones. Sweden's idea is that if new study programmes are constructed they will remain stable for many years to come.

KTH has supported the development of new teaching programmes in Russia, Ukraine, Estonia, Belarus, Moldova, Georgia and Ethiopia. Several countries have also announced their interest in getting the same support.

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## 1. BACKGROUND

With a succession of former command economies changing to market economies, land and property issues have been thrown into prominence. Land and buildings are being privatised with the support of legislation concerning rights of ownership, leasehold etc. Mortgage systems are gradually being built up to make real property mortgageable, the intention being among other things to support investments in the real property sector but also to support the general economy through credit multiplier effects based on increase of mortgages.

Developments have created a need for the registration of rights, which calls for administrative systems. Representatives of national administrative bodies tend to think, however, that if only one develops good information-proceeding systems, everything will run smoothly. This, of course, is a serious misconception, because automated land registers, cadastres etc. are but the ultimate reflection of an extensive property law complex of more or less standardised rights, objects of the rights and rights-holders for the exercise of the rights (land or buildings, usually). Then again, registration is not a one-off exercise. Instead rights have to live with economic development and be successively changed in response to new societal needs. Rights which are unchangeable become obstacles to development instead of supporting it.

This complexity can be briefly illustrated with one or two examples. Changes of ownership and use must be manageable. Property units must be amenable to re-formation through subdivision, amalgamation and the transfer of a piece of land from one property unit to another. Other spatial rights must also be changeable. In addition, the entire property system must be managed with deference to public restrictions – planning and environmental provisions, for instance.

Building up a legal system which can cope with managing rights relating to real property takes time and there are many pitfalls. The system has to be designed in such a way that owners and other rights-holders will be secure in their possession and also in connection with investments. In addition, rights must be mortgageable, so as to generate capital when the need occurs, at the same time as creditors must have the assurance of an attachment procedure. The system should also be easy to administer, for the avoidance of high transactional costs in connection with changes to individual rights. Heavy bills from lawyers, estate agents and surveyors, and high taxes, can all impede or delay desirable changes.

To cope with the transition to a market-oriented system, legislation has to be built up, organisations and professions created and university education devised. This is true of many countries. Developments in Russia and other eastern block countries are at the bottom of

KTH's involvement in international educational issues relating to land management and focusing on tenure issues.

This interest began after the dissolution of the Soviet Union, when Sweden, aided by the then Swedish development co-operation organisation BITS, began supporting the privatisation of land in Russia. This was soon followed by similar projects in other former Soviet Republics. In evaluations of the Russian project, fears were expressed that the work could not be secured for the long term unless the education system was also changed. Representatives of BITS therefore contacted KTH to enquire after the possibility of starting a study programme for academics. It was decided to inaugurate an 18-month MSc programme in Land Management, focusing on tenure issues, in 1996. The programme was to be funded by BITS. Funding responsibility has since been taken over by the Swedish International Development Cooperation Agency (Sida).

I was also clear from the outset that the land management programme was part of a *three-stage process*. First students are trained in Sweden. Some of them can then continue at postgraduate level but will gain their doctorates in the home country. At the third stage, support is given to the build-up of study programmes at universities in the partner countries.

An account will be given of this KTH work, since the experience gained from it seems to have a bearing on future development opportunities for surveyor's profession.

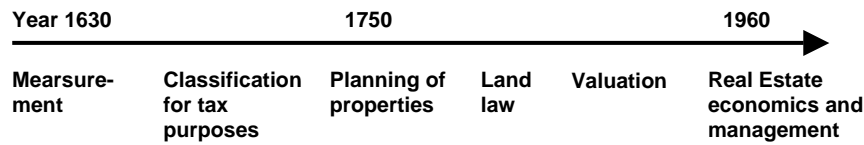
## 2. EDUCATIONAL PHILOSOPHY

Surveyor training programmes in Europe vary in character (Allan 1996, Mattsson 2000, 2001). A number of countries have entirely technical programmes dealing with measurement and cartography (GIM included). This is particularly noticeable in the south of Europe. In Central Europe the training programmes include elements of law and land development, while the Nordic surveyor training programmes are based on the tradition of the Europe land reforms of the 17th, 18th and 19th centuries (the enclosure movement, land consolidation etc.). In addition to cadastral measurement, real property law and real property economics bulk large on the training programme. This makes the Nordic programmes eminently suitable as an example to countries with land administration at the build-up stage. This is a matter, not only of measurement, map-drawing and registration of rights, but also of knowing how rights can be changed. True, in certain countries changes in rights could be termed a matter for lawyers, but if there is any group suited to addressing the relation of rights to their actual exercise on the ground, it is the group concerned with measuring and plotting rights – surveyors, in other words. But this, of course, is an issue for the legislator to decide.<sup>1</sup>

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<sup>1</sup> The difference between countries can be illustrated by the fact that in Finland only surveyors may deal with easement issues, while in Denmark surveyors only deal with rights of way, and in countries with a German tradition the signing of easement agreements is the notary's responsibility.

**Fig.** Historic evaluation of Swedish land surveyor competence



The figure above shows the competence profile of the Swedish surveyor as it evolved from the mid-17th century to the 1960s. During the past 40 years it has also changed from being agriculturally oriented to focusing mainly on urban issues. It also needs to be said that scientific progress had made it impossible for the full gamut of knowledge to be communicated to one and the same person. University studies, accordingly, have come to be specialised, in such a way that during their final year students have been able to choose between technical, legal and property-economic specialities. Developments in the other Nordic countries have followed much the same pattern.

Thus the idea of the land management programme was to use the long Nordic experience of property law studies, including property valuation, to retrain technically trained surveyors by giving them an insight into the importance of land rights and methods of changing them.

### 3. TRAINING CONTENT

An MSc programme would be developed. This has been made to focus on legislation and economics in connection with land issues. Swedish legislation, though with international vistas, is the foundation on which a clear alternative for a possible way into the future is identified, the idea being in this way to prepare the students mentally for inevitable changes to come. The Swedish jurisprudential model of land administration, then, is not being exported but forms a basis of alternative thinking. This way of looking at things is virtually self-evident, since laws can seldom be copied from one country to another, while on the other hand ideas can be transposed from one legal tradition to another.

Thus a study programme was built up at MSc level, comprising one year's courses followed by a degree assignment involving half a year's work. This original programme, however, is to be extended to two years as from the autumn of 2007, in compliance with the so-called Bologna Agreement, but the focus of the programme will not change. Instead, rights studies are being deepened at the same time as a course of mass valuation will be added. Now that the original programme is about to become history, the new one will be described. Its structure is illustrated in App. 1.

The KTH MSc Land management programme follows two main tracks, one legal and the other economic. First a brief description of the legal track.

*Land Policy* introduces the whole programme, to indicate connections between policy issues and land management/administration.

*Property Formation and Cadastre Mapping* gives methods for dealing with changes in the size of property units. Legal consequences of property formation for rights in the property units such as easements and mortgages are also dealt with. The connection between planning and property formation is shown.

*Property Transactions* deals with property conveyancing, mortgage systems and attachment. Basic rights such as leasehold, easements and rent are also dealt with. The importance of family law and the law of associations for judging questions of ownership is covered.

*Urban Land Development* is an applied course in which the students apply their knowledge of law and economics to planning the transformation of a sparsely developed area with many property owners. Infill development is to take place. The new property structure is to be shown, in addition to which, local infrastructure is to be planned and costed. Methods of property owner financing instead of public funding of infrastructure are broached.

*Development of Property Rights* (two courses) illuminates very many types of rights and, in particular, how they can be altered. The rights in question include common rights to land, joint rights to roads and other facilities, lease rights, mining rights, water rights, hunting and fishing rights, pasture rights, overlapping other rights, and 3D property rights. Different kinds of land consolidation are dealt with. Negotiating techniques are included. The technique of regulating land use is also addressed on the basis of planning provisions, agricultural and forestry policy, heritage conservation and environmental regulations. The relation of the banking system to the real estate and credit market is dealt with in a legal perspective. In addition, theories are given as to why property rights come into being. The aim is for the students to be well aware of the complexity of land from a legal viewpoint.

*Land Information Systems* deals with the question of why registers are compiled. Thus the point of emphasis is their function in society rather than their technical structure, but the course does include technical elements, to show the connection between technology and law. The need for standardisation of rights through legislation is dealt with. To illuminate the difficulties of changing legislation, an element of legislative development has been included, with reference to real property registers.

*Compulsory Purchases* deals with expropriation issues, not least the connection between valuation and law. Other methods of compulsory purchase, and not only expropriation, are also dealt with.

*Comparative Law* is a short course aimed at showing the differences between legal families, and also at pointing out the hazards of simply transposing legislation from one country to another. Ideas can be transposed, but hardly specific rules.

The economic track is constructed as follows.

*Economics and Quantitative Methods* is above all intended to give the students a sense of economic micro theory, such as supply and demand.

*Real Estate Investment Analysis* is meant to inculcate the ability to consider revenue and expenditure over time. This course, like the Economics one, lays the foundations of property valuation.

*Real Property Valuation* provides the basic methods of property valuation, above all in the light of American experience.

*Mass Valuation with GIS Methods* provides methods of efficient mass valuation for estimating land, buildings etc. The ultimate purpose of the economic courses is to support the build-up of taxation systems linked to real property registers of different kinds.

*Theory of Science and Research Methodology* is a course supporting thesis work.

As can be seen, this programme focuses almost entirely on law and economics, but it is applicable to land and buildings in what can be termed cadastral contexts. The content is dominated by aspects of change and thus ties in neatly with parts of the International Federation of Surveyors' (FIG) definition and FIG's view of practising surveyors, namely the parts in the sphere of efficient land administration, including transformation of rights (redevelopment).

#### **4. SELECTION PHILOSOPHY**

It was decided that the students taking the programme would come either from administrative bodies or from the academic community. In this way they could act as advisers to decision-makers as well as university teachers. There is also the possibility of part-time university teaching with one foot in practice and the other in teaching. Spin-off effects can be achieved through the universities, as a result of knowledge all the time being communicated to new annual cohorts. With their newfound knowledge the students can also show other university teachers alternatives to the traditional study programmes and in this way show how attractive knowledge of law and economics can be to technically qualified surveyors. This provides opportunities for creating changes in existing study programmes but also for creating entirely new programmes at university level.

The original idea was for surveyors only to be trained, but almost immediately it was discovered that lawyers and economists working in land administration were also good target groups. Geographers and scientists specialising in the environment, on the other hand, proved often to be unsuitable as target groups, because they seem to have difficulty in seeing land in a rights perspective.

As mentioned, BITS, followed by Sida, has funded the programme from its inception; this includes both KTH's overheads and the students' scholarships. The funding agency also decides which countries are to be included.

Initially students were recruited from the Baltic states (Estonia, Latvia and Lithuania), Russia, Ukraine and Belarus. The outcome, not least in terms of what happened when the students returned home, was evaluated early on. The students were found to be satisfied with their training, but more important still, the employers were satisfied. They acquired advisers who could point out new paths of action in a way which people trained in their own country could not. It took a little longer, however, for the universities to realise that their study programmes would have to be altered, though the technical universities opened up to change at an early stage of things, even if certain teachers were sceptical about elements of law in the study programme, since legal science was changing so rapidly. Nor was it properly realised that complex, abstract systems are built up by means of law. Quite simply, the importance of real property law in market economies was not appreciated. Economics was easier to understand. The universities of agricultural sciences had more difficulty in accepting the need for change, and this, one may suspect, was due to their being used to the planning of big farms (kolkhozes and sovkhoses) and feeling that their breakdown into smaller parcels should not be supported through the education system.

The circle of countries was gradually expanded at the same time as the Baltic countries were phased out. This was justified by their EU affiliation, given that Sida is not tasked with supporting developments within the EU. Instead Moldova, Georgia, Armenia, Uzbekistan, Kazakhstan, Kyrgyzstan and Tajikistan were included. The aim is to train at least 20, if possible 30 students from each country, in that case at a rate of 2-5 students per country annually. The Russian and Ukrainian contingents have been larger (totally 100 and 50 students respectively). All students are interviewed on the spot by KTH teachers, partly in order for the teachers to get to know each country's problems through these visits.

The Balkans was the next region of interest, and students are now being recruited from all countries of the former Yugoslavia except for Slovenia, which is an EU Member State.

In the Amhara region of Ethiopia a major project has been built up for surveying land leasehold rights. The farmers are to be issued with certificates showing their land acreage and in this way will be able to feel secure in their farming and investments. At the same time it is clear that the standard of education in the country is unsatisfactory, added to which, there are big vacancies in administrative bodies concerned with land issues. Following contact with KTH it was resolved that 24 students active in practice or as university teachers were to be given land management training at KTH and would afterwards help to build up a university study programme (see below).

For a year now, people from Kenya, Tanzania and Uganda have also been undergoing training, the purpose here being eventually to change university education but also to support practice.

Initially a total of 30 persons were trained in each round. This has been gradually expanded, until at present some 60 students are being trained per year. Altogether some 400 students from more than 20 countries have undergone the training.

## 5. PhD STUDIES

The second stage of the three-stage process was the underpinning of PhD studies (*aspirantura* in the former Soviet Union). It was financed by the Swedish Institute. Five batches of about 5-20 former LM students were invited to KTH to take theoretical advanced courses at PhD level. The knowledge thus gained was to form the basis of the students' thesis work in their home countries. There was a problem here, however, namely that the local tutors were often behind the students in terms of learning, which resulted in differing opinions as to the nature of science and, accordingly, different views concerning the focus of the PhD theses. Then again, western science was not always considered reliable, since the tutors themselves were prevented from assimilating it by language difficulties (insufficient knowledge of English). Several LM students, however, have defended PhD theses, and those remaining within the university community are likely to gain important positions eventually.

A small number of students have gone on to both additional Master's and PhD studies in the west, including the USA. Permanent defections to the west, however, are surprisingly few: just over 5%. The same goes for dropouts from the land and property sector in their home countries. On the other hand, many students change workplaces after a few years. Evaluations suggest, moreover, that they normally progress rapidly in their careers.

## 6. UNIVERSITY SUPPORT

The third stage of the three-stage process is university support for the build-up of revised or new university programmes focusing on land administration. These activities started with Ukraine (three universities), Estonia and Belarus wishing to review their study programmes. The idea was for this to take place at MSc level, but as work progressed it was found that the foundation Bachelor's level would also have to be changed.

The technique was to invite teachers with an interest in change to Sweden so that they would be able to get a first-hand view of Swedish land administration and discuss the training programme for Swedish surveyors. Next they were to plan new courses back home, the content of which was discussed on the Internet and on field trips with Swedish partners. Representatives of the education departments also took part, so as to arrive at an understanding of the need for change. The new programmes proved successful in terms of student intake, and this enabled the universities to expand with the help of paying students, which boosted their financial resources.

Another two universities in the Ukraine wanted to join a support programme. This was coordinated with universities in Moldova and Georgia and one in Moscow. A desire was then expressed for support in organising a new training programme for 40-50 universities in Russia, starting in the autumn of 2008. Ethiopia, as has already been mentioned, also wanted support for starting up a study programme in the autumn of 2006. It is worth adding that applications from other countries for support for the build-up of new programmes have also been submitted to the EU-funded Tempus programme, and these are currently under assessment. Uzbekistan, however, has been allocated funding already. It is also worth



mentioning the Polotsk State University in Belarus has been allocated funding for the development of its law faculty focusing on real property issues, with support from KTH and other bodies.

The two projects in Russia and Ethiopia had similar outcomes, though the Russian study scheme was partly burdened with vested interests. The Russian project was first on the scene, but the Ethiopians were able to follow its concluding discussions. This enabled them to pick out the best of the Russian project, develop it further and adapt it to local conditions. Because they were starting from scratch, they did not have to make much allowance for vested interests. The programme in Ethiopia will therefore be commented. This began with 60 students in the autumn of 2006 and will be expanding to 120 students in 2007, later rising to 200 students annually. The study programme is of four years duration and leads to a Bachelor's degree. The course structure is shown in App. 2.

The idea was to create a modern study programme to support the privatisation processes now in progress. The study programme would concentrate on what is often termed land administration, though it could equally well be termed land tenure development. Former students, including several university lecturers, representatives of the Amhara regional administration and representatives of KTH, drafted a study programme. This was successively revised and finally presented at a conference in Bahir Dar, the capital of the Amhara region, with a population of 18 million.

It was established from the very outset that the course content of the new programme would follow a number of tracks, namely Basic, Surveying, Law, Economic and Land Administration tracks (five tracks in all). In addition, the land administration track would be overarching in the sense of all subject fields being integrated in certain of the courses, to show the students how different subject fields interact in practice. Expropriation is a case in point. The area has to be determined and measured, title transferred, other rights eliminated or changed, compensation determined and paid, and the new area registered.

The law and economics tracks each comprise about 15% of the programme's duration, while the other three occupy 20-25% of the time. It should be noted, however, that land administration also includes large elements of specialised law as well as economics.

The *basic track* consists of mathematics, statistics, computer science but also knowledge of natural resources.

The *surveying track* contains subjects designed to confer skills in cadastral measurement, i.e. the measurement of objects on the ground, the compilation of maps and the inputting of results in databases (N.B. not the build-up of databases, which is attended to by computer science specialists). The courses are dominated by geodesy and geographic information systems.

The *economic track* is intended to confer a basic knowledge of economics, so that the students will be able to pursue further studies of property markets and valuation techniques.

The *law track* is aimed at conferring a basic understanding of the function of law. Civil law and public law, as well as questions concerning the way in which they overlap in the assessment of land issues, are of pivotal importance. Where civil law is concerned, transmission of rights of user (land ownership does not exist in Ethiopia, leasehold rights being used instead for land management), mortgage systems, sub-rights and attachment are important. But association law, family law and rules of inheritance are also essential to an understanding of land administration.

The *land administration track* is aimed at giving the students a knowledge of the way in which rights are changed, but also how they are regulated. Land reforms, planning in urban areas with concomitant changes of rights, the management of commons for livestock husbandry (but also for irrigation purposes) are included. The handling of rights for infrastructure generally is another priority.

It is important for the students to realise that after graduation they will be working in the field, and field measurement, accordingly, is vitally important, but so too is a knowledge of negotiating skills, and the programme has therefore been made to include a negotiation course.

The aim of providing comprehensive training in land administration based on tenure issues appears to have been achieved, but the final assessment will have to wait until the first annual cohort has entered the job market. Developments in Russia and in the former eastern block states also deserve to be kept under observation.

## **7. CONCLUSIONS RELATED TO FIG**

The land administration developments in progress in world today suggest that in a number of countries the surveyor's profession perhaps needs to reconsider its professional content, and that this reconsideration must begin right at the training stage. Otherwise there is a risk of the profession being marginalised (tendencies of this kind are already observable in Germany and in the Netherlands), in which case the study programmes will fail to attract students. Changes of name, e.g. to geomatics, are of little help in this respect. Instead the training programmes have to be adapted to a changed reality. Research successes in a particular field, e.g. satellite geodesy, will hardly serve to make study programmes popular either. Students normally want to acquire skills that will make them attractive in the job market, once they have graduated. Experience from the Scandinavian countries, not least, points to the possibility of acquiring new fields of knowledge, since surveyors in these countries are actively involved in developments in such widely varying fields as measurement, legislation and development of property valuation standards.

Perhaps indeed the rapid development of professional skills concerning measurement issues via higher geodesy and GIM can now turn into a rapid development of skills for dealing with rights issues. Developments in former command economies, at least, suggest that this is a growing sector which must be handled by a professional category, in which case, given the

right training from the very outset, surveyors should be in a very good position to take charge of things. All competence needs, of course, are met, sooner or later, by one or other professional category, and so surveyors have a chance here of advancing their positions. True, one can say that lawyers know about law, economists about economics and geodesists about measurement. But if instead one starts with the fact that a great deal of measurement is concerned with legal objects (property units etc.) having an economic value, then surveyors with a general background can capture an interesting combination of subjects relating to land administration. This focus can then be evolved into land development.

This makes it important that rights should be viewed as a dynamic element in society which has to be changed, not just entered in property registers of different kinds. Someone, then, has to attend to the process of change, which involves measurement, law, economics, negotiating skills and also a basic insight into planning at detailed level. Thus world developments in the direction of market economies can provide openings for the renewal of the surveyor's profession and thus point the way towards new fields, even for states which are economically advanced.

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## BIOGRAPHICAL NOTES

**Hans Mattsson** is surveyor, DTech, Dr h.c. (mult) and Professor of Real Estate Planning at the Royal Institute of Technology (KTH), Stockholm. For many years he has been concerned with cadastral issues in practice. Recently, together with Nordic colleagues, he concluded a project concerned with comparing the property purchase and parcelling processes in the different countries. He is in charge of the Land Management programme at KTH and has been actively involved in the university support programmes mentioned in this article.

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**Master's Programme in Land Management at KTH, Stockholm, Sweden**  
120 credits (ECTS)

**Semester 1  
(autumn)**

|  |                            |   |                                      |
|--|----------------------------|---|--------------------------------------|
| Land Policy (3c)                             | Property Transactions (9c) |   |                                      |
| Property Formation and Cadastre Mapping (9c) |                            | Economics and Quantitative Methods (4c) | Real Estate Investment Analysis (5c) |

**Semester 2 (spring)**

|                                |                      |  |  |
|--------------------------------|----------------------|--|--|
| Urban Land Development (5c)    | Comparative Law (4c) | Development of Property Rights I (7,5c)                                      |  |
| Real Property Valuation (7,5c) |                      | Theory of Science and Research Methodology (6c of totally 7,5 in the course) |  |

**Semester 3 (autumn)**

|  |                           |  |  |
|--|---------------------------|--|--|
| Theory of Sc. cont. (1,5c)             | Compulsory Purchases (4c) | Development of Property Rights II (8c) |  |
| Mass Valuation with GIS-methods (7,5c) |                           | Land Information Systems (9c)          |  |

**Thesis ½ year after semester 3**

## Curriculum for Land Administration, Bahir Dar University, Ethiopia

| A | Courses  | Course code | Cr.hour    | Semester  |           |           |           |           |           |           |           |
|---|--|-------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|   |  |             |            | 1         | 2         | 3         | 4         | 5         | 6         | 7         | 8         |
|   | <b>Basic Track</b>                                 |             |            |           |           |           |           |           |           |           |           |
| 1 | Introduction to Land Administration                | Laad 121    | 4          | 4         |           |           |           |           |           |           |           |
| 2 | Applied Mathematics                                | Math 150    | 4          | 4         |           |           |           |           |           |           |           |
| 3 | Linear Algebra and Calculus                        | Math 230    | 4          | 4         |           |           |           |           |           |           |           |
| 4 | Int. to Statistics                                 | Math. 241   | 3          |           | 3         |           |           |           |           |           |           |
| 5 | Basic Computer, Programming and Databases          | Coms 120    | 8          |           | 8         |           |           |           |           |           |           |
| 6 | Natural Resources                                  | Laad 222    | 4          | 4         |           |           |           |           |           |           |           |
| 7 | Communicative English Skill I                      | Flee 101    | 2          | 2         |           |           |           |           |           |           |           |
| 8 | Communicative English Skill II                     | Flee 102    | 2          |           | 2         |           |           |           |           |           |           |
|   | <b>Total</b>                                       |             | <b>31</b>  |           |           |           |           |           |           |           |           |
|   | <b>B Surveying Track</b>                           |             |            |           |           |           |           |           |           |           |           |
| 1 | Basic Geodesy                                      | Laad 231    | 4          |           |           | 4         |           |           |           |           |           |
| 2 | Geodesic survey                                    | Laad 233    | 4          |           |           | 4         |           |           |           |           |           |
| 3 | Cadastral Survey                                   | Laad 333    | 4          |           |           |           |           | 4         |           |           |           |
| 4 | Satellite Geodesy (GPS)                            | Laad 234    | 4          |           |           |           | 4         |           |           |           |           |
| 5 | Remote Sensing, Photogrammetry and Digital Mapping | Laad 236    | 4          |           |           |           | 4         |           |           |           |           |
| 6 | Geographical Information System (GIS)              | Laad 336    | 8          |           |           |           |           |           | 8         |           |           |
|   | <b>Total</b>                                       |             | <b>28</b>  |           |           |           |           |           |           |           |           |
|   | <b>C Economics Track</b>                           |             |            |           |           |           |           |           |           |           |           |
| 1 | Micro and Macro Economics                          | Laad 242    | 8          |           |           |           | 8         |           |           |           |           |
| 2 | Property Market                                    | Laad 342    | 4          |           |           |           |           |           | 4         |           |           |
| 3 | Investment Theory & Practice                       | Laad 344    | 4          |           |           |           |           |           | 4         |           |           |
| 4 | Property Valuation                                 | Laad 443    | 8          |           |           |           |           |           |           | 8         |           |
|   | <b>Total</b>                                       |             | <b>24</b>  |           |           |           |           |           |           |           |           |
|   | <b>D Law Track</b>                                 |             |            |           |           |           |           |           |           |           |           |
| 1 | Introduction to Law and Comparative Law            | Laad 251    | 8          |           |           | 8         |           |           |           |           |           |
| 2 | Constitutional and Public Law                      | Laad 252    | 4          |           |           |           | 4         |           |           |           |           |
| 3 | Civil Law  | Laad 353    | 8          |           |           |           |           | 8         |           |           |           |
|   | <b>Total</b>                                       |             | <b>20</b>  |           |           |           |           |           |           |           |           |
|   | <b>E Land Administration Track</b>                 |             |            |           |           |           |           |           |           |           |           |
| 1 | Physical Planning                                  | Laad 164    | 4          |           | 4         |           |           |           |           |           |           |
| 2 | Land Regulations                                   | Laad 361    | 4          |           |           |           |           | 4         |           |           |           |
| 3 | Infrastructure Regulations                         | Laad 364    | 4          |           |           |           |           | 4         |           |           |           |
| 4 | Lease in Relation to Development                   | Laad 461    | 4          |           |           |           |           |           |           | 4         |           |
| 5 | Commons  | Laad 362    | 4          |           |           |           |           |           | 4         |           |           |
| 6 | Land Reforms                                       | Laad 466    | 4          |           |           |           |           |           |           |           | 4         |
| 7 | Negotiation and Communication                      | Laad 465    | 4          |           |           |           |           |           |           | 4         |           |
| 8 | Property Rights and Land Registration              | Laad 468    | 4          |           |           |           |           |           |           |           | 4         |
|   | <b>Total</b>                                       |             | <b>32</b>  |           |           |           |           |           |           |           |           |
|   | <b>Research methods</b>                            | Laad 271    | <b>2</b>   |           |           | <b>2</b>  |           |           |           |           |           |
|   | <b>Thesis</b>                                      | Laad 472    | <b>6</b>   |           |           |           |           |           |           |           | <b>6</b>  |
|   | <b>No. of cr. Hours per semester</b>               |             |            | <b>18</b> | <b>17</b> | <b>18</b> | <b>20</b> | <b>20</b> | <b>20</b> | <b>16</b> | <b>14</b> |
|   | <b>Total Credit Hours</b>                          |             | <b>143</b> |           |           |           |           |           |           |           |           |

## Schedule for Land Administration, Bahir Dar University, Ethiopia

### Year 1

|   |                                       |  |                      |
|---|---------------------------------------|--|----------------------|
| Introduction to Land Administration (4cr.hrs) | Natural Resources (4cr.hrs)           | Physical Planning (4cr.hrs)                          | Statistics (4cr.hrs) |
| Applied Mathematics (4cr.hrs)                 | Linear Algebra and Calculus (4cr.hrs) | Basic Computer, g and Databases Programmin (8cr.hrs) |                      |
| Communicative English Skill I (2cr.hrs)       |                                       | Communicative Eng lish Skill II (2cr.hrs)            |                      |
| <b>Total 18</b>                               |                                       | <b>Total 18</b>                                      |                      |

### Year 2

|   |                            |   |  |
|---|----------------------------|---|--|
| Basic geodesy (4cr.hrs)                           | Geodetic Survey (4cr.hrs)  | Satellite Geodesy (GPS) (4cr.hrs)       | Remote Sensing & Photogr & Digital Mapping (4cr.hrs) |
| Introduction to Law and Comparative Law (8cr.hrs) |                            | Micro & Macro-Economics (8cr.hrs)       |  |
|   | Research Methods (2cr.hrs) | Constitutional and Public Law (4cr.hrs) |  |
| <b>Total 18</b>                                   |                            | <b>Total 20</b>                         |  |

### Year 3

|                            |                                      |   |  |
|----------------------------|--------------------------------------|---|--|
| Land Regulations (4cr.hrs) | Cadastral Survey (4cr.hrs)           | Geographical Information Systems, (8cr.hrs) |  |
| Civil Law (8cr.hrs)        |                                      | Property Market (4cr.hrs)                   | Investment Theory & Practice (4cr.hrs) |
|                            | Infrastructure Regulations (4cr.hrs) | Commons (4cr.hrs)                           |  |
| <b>Total 20</b>            |                                      | <b>Total 20</b>                             |  |

### Year 4

|  |   |                        |  |
|--|---|------------------------|--|
| Lease in Relation to Development (4cr.hrs) | Negotiation and Communication (4cr.hrs) | Land Reforms (4cr.hrs) | Property Right and Land Registration (4cr.hrs) |
| Property valuation (8cr.hrs)               |   | Thesis (6cr.hrs)       |  |
| <b>Total 16</b>                            |   | <b>Total 14</b>        |  |