Degree Program Documentation

Master program *Master in Management (MiM)*

TUM School of Management,
Technical University of Munich

Program name: *Master in Management (MiM)*

Department: TUM School of Management

Degree: Master of Science (M.Sc.)

Standard Duration of Studies (Credits): 4 Semester (120 Credits)

Form of study: Full time

Admission: Aptitude Assessment

Beginning: WS 2016/17

Language: English

Responsible for the program:
Vice Dean of Academic Affairs
Prof. Dr. Dr. Holger Patzelt

Academic Program Director
Prof. Dr. Reiner Braun

Further details for special degree programs:
The degree program is offered at the Campus in Munich.
The degree program is part of the „International Master in Industrial Management (IMIM Program)“

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1. Objectives of the degree program

1.1 Purpose of the degree program

The range of interdependencies between individual organizational areas as well as the progressive disintegration of traditional boundaries between departments are changing the type of qualifications required. Firms increasingly demand interdisciplinary thinking and acting from their employees. Particularly at the interface between business departments and engineering or scientific divisions, communication and know-how barriers repeatedly arise in practice. These barriers result from a lack of knowledge and understanding of the respective other discipline and subject culture. Increasingly, it is not only business economists who are active in the management of globally active companies, but also engineers and scientists who make decisions at the interface between management and engineering or natural sciences. Engineers and natural scientists with a profound education and understanding in management can help companies to create and maintain competitive advantages – while at the same time avoiding higher costs, lower quality and loss of time.

With this in mind, the TUM School of Management’s Master’s Program in Management (MiM) aims to provide highly motivated bachelor graduates with a technical or scientific first degree the opportunity to participate in an outstanding training in international management, in which the relevant core disciplines and necessary skills are taught. As an English study program, the Master in Management is equally attractive for both national and international prospective students. At the same time, the program contributes to the international development of TUM as a brand, as graduates with an interdisciplinary profile are very popular among international industrial groups and well-known management consultancies. In addition, there is a high demand for graduates with a degree at the intersection of technology/natural science and management from the TUM in technically-oriented medium-sized companies as well as in start-ups.

In the five fields of competence in management (Innovation & Entrepreneurship; Marketing, Strategy & Leadership; Operations & Supply Chain Management; Finance & Accounting; Economics & Policy), future graduates of the Master in Management are prepared for the requirements of a future job at the intersection of technology/natural science and management. Thus, the graduates of the Master in Management are in a position to understand the often differing mentalities of the various disciplines and to build bridges between them.

1.2. Strategic importance of the program

TUM School of Management offers a comprehensive portfolio of study programs, including its Bachelor, Master and executive education study programs. This reflects the idea of lifelong learning and implements the mandate of the Bavarian Higher Education Act (Bayerisches Hochschulgesetz) to offer degree courses and executive education. In accordance with the strategic orientation of the TUM School of Management, all programs offer an international management training at the interface of business and engineering or natural sciences and/or life sciences with a strong entrepreneurial focus.
The objective is to provide graduates with a well-grounded, internationally oriented management education and an understanding of the engineering, natural or life sciences to prepare them for positions of responsibility in business and society. This is, inter alia, promoted by the active participation of the professors of the TUM School of Management in numerous academies and advisory boards, which are concerned with important decisions in science, management and society.

The contents of the programs vary according to the different admission requirements and the individual education of the applicants. Programs of TUM School of Management can be divided into three categories:

1. Interdisciplinary management programs with a focus on engineering, natural and life sciences: This category includes the Bachelor’s program TUM-BWL (Management and Technology), the Master in Management and Technology (TUM-BWL), and the Master in Consumer Affairs (MCA), which is expected to be replaced by the Master in Consumer Science (MCS) in the winter semester 2018-19.
2. Programs that provide a basic management education for students with a technical or scientific first degree: This category includes the Master in Management (MiM).
3. Programs in the field of Executive Education: The area of Executive Education and Lifelong Learning is structured analogously to this strategy. In the extra-occupational Executive MBA programs for experienced professionals with management responsibility, participants are developed into effective and responsible managers by expanding their knowledge, refining their skills and developing their personality. The continuing Master’s program in Management & Innovation and other planned continuing education programs expand the program portfolio by targeting young professionals with initial work experience and (as yet) no management experience. The certificate programs are subject-specific programs for the further development of both experts and managers. As customized programs, they are offered on a part-time basis and are set up specifically for each company.

Based on this background, the study program portfolio of the TUM School of Management is structured as shown in figure 1 below.
2. Qualification profile

2.1. Professional competence

Graduates of the Master in Management are able to analyze business problems in real contexts with qualitative and quantitative methods. In particular, they are able to identify and work on fundamental relationships and questions in the areas of Innovation & Entrepreneurship; Marketing, Strategy & Leadership; Operations & Supply Chain Management; Finance & Accounting as well as Economics & Policy. In one or more of these areas, they can develop and implement adequate approaches to solve complex problems. Additionally, graduates can apply the most important concepts and methods of business research. Furthermore, they are able to use basic economic and legal terms and methods, as well as to identify their interrelationships with management facts. Since the graduates can prove a scientific and/or engineering study in the Bachelor, they are particularly predestined to grasp and evaluate problems at the interface between this Bachelor subject and management questions. Lastly, the graduates develop profound English language skills and have acquired the ability to place the above-mentioned competencies in intercultural contexts.
2.2 Research capability

Graduates of the Master in Management are characterized by their advanced knowledge in research and methods and their application: They can identify practically and theoretically relevant research questions, develop research designs to answer them and apply adequate analytical methods. Moreover, they are able to interpret the results obtained and communicate them scientifically adequate.

2.3. Social competencies

Graduates of the Master in Management can successfully fulfill management tasks within complex and internationally oriented projects with a management and technical orientation. In particular, they are able to integrate different perspectives of business and technical oriented employees and to consider them adequately in their decisions. Likewise, they are able to assume responsibility for the strategic management of their team. Moreover, all graduates have minimum of intercultural skills. This skills set helps them to meet the requirements of an increasingly international work and research environment in the field of management, in which, for example, international teams have to be enabled to cooperate successfully.

2.4. Personal skills

The graduates of the Master's program have acquired the competence to set a goal based on their strengths, weaknesses and interests and to work towards it. They are able to learn independently and apply what they have learned. In addition, they are able to plan, to organize and to carry out projects as part of a team or individually. Moreover, the graduates are able to communicate in English with business fluency.

2.5. Career prospects

The Master’s program prepares students both for an occupation as a generalist, for example in a management consultancy or in public authorities or associations, and for an occupation as an "industrial engineer", i.e. for an interdisciplinary activity consisting of engineering and economic science parts. Last but not least, graduates can also become entrepreneurs themselves. For example, the following job profiles can be realized:

- Project manager: Management of an innovative project (e.g. digitization) within a company,
- Product developers: Application of innovation techniques to identify new trends and their implementation in technical products,
- Strategy development in a start-up or established manufacturing company, for example in the automotive (supplier) industry,
- Production Manager/Logistics Planner/Chief Operating Officer (COO): Strategic and operative planning along the value chain as well as application of quantitative methods for decision support (Operations Research) in technology-oriented companies,
- Consultant for a business consulting company, especially for projects at the interface to technology,
- Entrepreneur: Found a start-up themselves.
3. Target groups

3.1 Target group

The core target group of the Master in Management comprises bachelor graduates from Germany and abroad with a university degree in engineering or natural sciences and a very high standard of English language skills. The knowledge in engineering and natural sciences acquired in the Bachelor’s degree is of particular interest. The Master in Management includes a series of classes in which the teaching of subjects at the interface of management with engineering/natural science plays a central role. Here the qualifications and knowledge of the applicants from the professional field of an engineer or natural scientist are a prerequisite for an understanding of the interface topic in research and teaching.

The sharp rise in the number of applicants in recent years, from an average of around 400 applicants at the time of the German-language courses to around 900 applications for the first intake and more than 1,700 applications for the second intake of the Master’s program in Management, reflects the high demand for a management course for graduates in the natural sciences and engineering.

3.2 Prior knowledge of applicants

The School of Management uses an aptitude assessment procedure to ensure that outstanding, highly motivated students with undergraduate degrees in engineering or natural science are recruited for the degree. Curricular analysis is used to check the existing knowledge of applicants. The Master in Management is taught in English, therefore a very high standard of English language skills is required for a successful application.

3.3 Target figures

An aptitude assessment process is used for the Master in Management in order to identify ideally suitable students for the degree program, so no exact target figure can be set. However, the Master in Management is designed for a group of around 175 students enrolled at the Munich campus. Currently at TUM School of Management, 55% of the students pursue a Bachelor’s program, 42% a Master’s program and 3% an Executive Education program. For the year 2020, the faculty plans a distribution of 50% Bachelor level, 42% Master level and 8% Executive Education level.
4. Demand analysis

The fact that the ability to work at the interface between management and the engineering and natural sciences represents a major competitive advantage is regularly confirmed. In the past, for example, both the company representatives of the cooperative companies of the Career Service Center and the members of the Advisory Board of the TUM School of Management have emphasized studies at the interface between management and the engineering and natural sciences. Different ways of thinking of different disciplines lead to communication and know-how barriers and become particularly clear in technical departments such as innovation management, product development and management, supply chain management or marketing.

Graduates with an interdisciplinary profile who "speak both languages" have a major competitive advantage in the labor market. This is confirmed by the employers and the first graduates of the previous degree programs in this field.

The surveys of the first graduate cohorts of the TUM-WIN degree program (a total of 28 participants from 93 graduates over the last three years) show that more than 80% of the respondents have already obtained a permanent position three months after completing their studies. Over 50% of the graduates work in companies in the machine and vehicle construction sector. The size of the company is usually more than 500 employees. Further popular employers are in the consultation and finance industry. 75% of the interviewees stated that they worked in an interface position between management and technology. Against this background, it is not surprising that 93% of the respondents would take this Master’s program at TUM again. These initial findings support the needs analysis carried out as part of the introduction of the previous Master's program in Management (TUM-WIN and TUM-NAWI).

With regard to the international Master's degree in Management, the TUM School of Management assumes that MiM graduates will be demanded as employees, especially in diverse teams of globally operating companies. Thanks to its management training, the TUM School of Management expects a successful career start for these graduates, especially in technology-driven companies that have hired, for example for a position of a key account management, pure engineers or natural scientists who have often had to acquire the necessary business knowledge on their own or on the job.

To conclude, the strategic orientation of the Technical University of Munich towards an international environment in the field of Master’s programs, the high demand for TUM graduates with an interdisciplinary profile on the part of companies as well as the development of the number of applicants confirm the attractiveness of the planned program.
5. Competitive analysis

5.1 External

The Master's program called "Master in Management" (MiM) has established itself primarily in Europe. More than 70% of the 250 globally identifiable programs are offered in Europe. Originally the degree was developed as a "consecutive Master's", i.e. a Master's program that is followed on from a Bachelor's program and built on its contents. However, many Management programs are now aimed at people with backgrounds in different disciplines: Indeed, only 20% of Master in Management programs worldwide explicitly require a bachelor's degree in management. One quarter is aimed at Bachelor graduates with previous knowledge of methodology and statistics (e.g. from a sociology, psychology or political science course). Half of all programs are open to students of all disciplines.

In Europe in direct competition with the Master in Management of the TUM are the comparable Master programs of the Eurotech universities, although none of the programs is offered with the title "Master in Management". For example, the École Politechnique Fédérale de Lausanne (EPFL) offers a comparable English-language program in "Management, Technology and Entrepreneurship". This Master's program, which is aimed at Bachelor's graduates in engineering or natural sciences, offers basic training in strategy, finance, accounting, human resources and management, as well as a specialization in one of the following two fields: Strategy, Innovation & Entrepreneurship or Operations Management & Systems Modeling. The course lasts a total of 18 months and the tuition fee is currently CHF 2,532.

The following Master's programs, similar to the TUM Master in Management, are offered in the German university market for students with degrees in STEM subjects:

- **RWTH Aachen: Wirtschaftswissenschaft (M.Sc.)** (English title: M.Sc. in Management, Business and Economics)
  The Master's program was introduced at RWTH Aachen University in winter semester 2009/10. It consists of a general compulsory area (45 ECTS), five (alternatively selectable) specialization areas (55 ECTS) and the Master's thesis (20 ECTS). Starting in winter semester 14/15, students have the opportunity to take one of the following five specializations: Corporate Development and Strategy; Operations Research Management; Sustainability and Corporations; Innovation, Entrepreneurship and Marketing or General Management (the modules can be freely combined from the four other specializations). The choice of the specialization area is made together with the application for the Master's thesis. The teaching languages are German and English.

- **University of Jena – Betriebswirtschaftslehre für Ingenieure und Naturwissenschaftler (M.Sc.)** (English title: M.Sc. Business Administration for Engineers and Natural Scientists)
  The Master's program is aimed at engineers and natural scientists. It consists of a basic module (at least 48 CP), an advanced module (at least 12 CP), a compulsory elective area (at least 30 CP + at least one seminar 6 CP) and the Master’s thesis (24 CP). The language of instruction is predominantly German, but some modules are also offered in English.
5.2 Internal
The TU Munich does not offer a comparable Master in Management program. Only the Faculty of Mechanical Engineering offers a course in mechanical engineering and management for engineers with in-depth technical expertise. It offers engineers management qualifications to take up leadership positions in companies’ technical departments. The Mechanical Engineering and Management program therefore overlaps to some extent with the Master in Management, but has a stronger technical focus and is taught in German.

6. Structure of the degree
The knowledge, skills and competences mentioned in the qualification profile are represented as described below by the course content and its structure. A special feature of this study program is that it is offered both in Munich and Heilbronn. The two locations differ in the range of the electives in management they offer. The following illustration gives an overview of the study structure:

Figure 2: Structure of the Master in Management.

Legend:
- Grey = Mandatory modules
- Blue = Elective modules

The specialized knowledge is ensured by providing classes of economic and legal basics as well as through classes in specific managerial fields such as Finance & Accounting, Management Science, Marketing, Production and Logistics (in illustration: Basics in Management).
In addition, students can deepen their knowledge in the above-mentioned subject areas in selected elective areas (in Figure: Electives in Management). This area of specialization is intended to provide the students maximum flexibility to prepare for their individually preferred career profile.

With regard to skills, particular emphasis is placed in the in-depth modules on teaching the contents at the interface with engineering and the natural sciences. This gives students the opportunity to apply their engineering or scientific knowledge in a direct management context. In addition, students also learn quantitative, mathematical and statistical approaches with which they can make well-founded decisions in research as well as in practice. These skills can be further deepened in practice-relevant tasks through the facultative project study, which is usually carried out with an industry partner (In figure: Project Studies). The module “Entrepreneurial, Strategic, and International Management” is the starting point to enable students to develop innovative processes and activities in internationally operating companies.

Master in Management students learn communication and social competences, which are vital for their future professional activity at the interface of management and engineering/natural science, by mainly attending classes together with students of other management programs. This ensures that everyone “speaks the same language”. International competence is ensured by the optional elective module "Advanced International Experience", the module "Entrepreneurial, Strategic, and International Management" and the "Mobility Option". To enable students to acquire the knowledge, skills and competences described above, the degree program is structured as follows:

Figure 3: Ideal study plan – Master in Management

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Type of module</th>
<th>No. of Credits</th>
</tr>
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<tbody>
<tr>
<td>Semester 1</td>
<td>Financial Accounting (MiM)</td>
<td>Mandatory module</td>
<td>6</td>
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<tr>
<td></td>
<td>Management Science (MiM)</td>
<td>Mandatory module</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Empirical Research in Economics and Manage-</td>
<td>Mandatory module</td>
<td>6</td>
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<tr>
<td></td>
<td>Principles of Economics</td>
<td>Mandatory module</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Entrepreneurial, Strategic, and Internatio-</td>
<td>Mandatory module</td>
<td>6</td>
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<td></td>
<td>nal Management</td>
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<tr>
<td></td>
<td><strong>Total credits semester 1:</strong></td>
<td></td>
<td><strong>30</strong></td>
</tr>
<tr>
<td>Semester 2</td>
<td>Investment and Financial Management (MiM)</td>
<td>Mandatory module</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Introduction to Business Law (MiM)</td>
<td>Mandatory module</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Marketing &amp; Innovation Management (MiM)</td>
<td>Mandatory module</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Production and Logistics (MiM)</td>
<td>Mandatory module</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Cost Accounting (MiM)</td>
<td>Mandatory module</td>
<td>6</td>
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<tr>
<td></td>
<td><strong>Total credits semester 2:</strong></td>
<td></td>
<td><strong>30</strong></td>
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<tr>
<td>Semester 3</td>
<td>Electives in Management</td>
<td>Elective module</td>
<td>30</td>
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<tr>
<td></td>
<td><strong>Total credits semester 3:</strong></td>
<td></td>
<td><strong>30</strong></td>
</tr>
<tr>
<td>Semester 4</td>
<td>Master’s Thesis (Master in Management)</td>
<td>Mandatory module</td>
<td>30</td>
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<tr>
<td></td>
<td><strong>Total credits semester 4:</strong></td>
<td></td>
<td><strong>30</strong></td>
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</tbody>
</table>

Total credits Master in Management: **120**
Compared to other Master’s programs, the proportion of compulsory courses is quite high at 50%. This is due to the heterogeneous previous education of the participants. The Master in Management is aimed at students that have not been educated in management: At the beginning of their studies, the students have little or no prior knowledge of management topics as well as of elementary principles of business law and economics. In order to achieve the overarching goal of the course (namely to educate graduates at the interface to the engineering and natural sciences in only four semesters), it is essential to ensure a basic selection of competences in the above-mentioned areas, especially in management. The thematic variety within the area of management can be explained by the generalist range of tasks of, for example, a project manager in all areas anchored as compulsory modules.

Here - and in the following - is an example of the job requirements of a project manager (see Chapter 2.5). A project manager assumes tasks in planning and operation for the implementation of entrepreneurial projects within a company. Simultaneously, he has to consider the background of strategic corporate objectives, the given corporate culture and structure, the given resources and the positioning of the company in the market. This description once again emphasizes that the graduates have to be educated to be generalists who are able to look at tasks from different perspectives, to evaluate them and to consider them in their decisions. This breadth of expertise - in contrast to expert tasks, which rather require detailed specialist knowledge in a clearly defined area - is typical of the job descriptions addressed by this degree program. Against this background, the significance of the individual mandatory modules is explained below and presented as an example for the context of the project leader in a company.

The module Investment and Financial Management imparts knowledge and methods, which projects (as generic term for all management activities) generate long-term value for the investors of the company and should therefore be undertaken. In addition, it is taught how such projects can be adequately financed. These competencies are indispensable for project managers. Of course, the project manager must be able to determine whether a planned project makes economic sense and how it can be financed.

The module Cost Accounting deals with aspects of cost accounting and the basics of controlling. This involves the procurement and the preparation and analysis of essential information about past, current and future factors affecting the company (such as production or sales figures). Priority thereby lies on internal accounting, i.e. on aligned documentation, planning, monitoring etc., in order to enable students to make optimal management decisions. This provision and processing of information for the short-term, operative planning of management plans is closely interlocked with the shareholder perspective, but is even more short-term and more operatively oriented. Such a competence is elementary for the economic and on-schedule implementation of projects and their control by the project manager.

The Financial Accounting module contains the basic of accounting and of the analysis of annual financial statements. Here the documentation for external, e.g. investors or the tax authorities, stands in the foreground. As a result, this activity is considerably more influenced by legal requirements than the internally oriented cost accounting. A project manager must understand the basic features of the legally binding task of external accounting in order to
ensure adequate representation of the project (in cooperation with experts in the company or service providers such as tax consultants).

While the previously mentioned mandatory elements of the Master in Management ensure that graduates can assess the profitability of a project and then adequately document and control it for internal and external purposes, they must also learn the necessary skills to design and develop such possible projects at all. A central element of MiM is the module *Entrepreneurial, Strategic, and International Management*. Here, the basics of entrepreneurial thinking are taught in interaction with strategic planning in internationally active companies and in intercultural teams. Entrepreneurial thinking is elementary for a project manager, since projects within organizations have many overlaps with entrepreneurial activities of independent companies themselves (e.g. the ability to solve problems under changing market conditions and considerable budget restrictions) and our students should be enabled to implement this in a globalized world, especially in international organizations. The example of the project leader chosen here illustrates that the importance of these competences goes far beyond an employment in a start-up company. Nevertheless, the obligatory teaching of these competences is a consistent anchoring of the TUM-wide strategy of an entrepreneurial and international orientation in the Master in Management.

The compulsory module *Marketing & Innovation Management* is closely linked to the above mentioned course. It deals with market aspects of innovations, e.g. how technologies can be acquired, and how the innovation process within companies can be designed. The focus here lies not so much on entrepreneurial thinking as in the previous module, but more on the concrete management of the innovation process. In addition, the students learn the basics of marketing, i.e. the clear strategic orientation of products (and innovations) to the target markets and the customers of the company, as well as an adequate communication with them. These competencies are also obviously relevant for a project manager who must be able to design and implement innovations in projects. In an economic environment characterized by intense competition and ever shorter product life cycles, this ability plays an increasingly important role. Companies can simply no longer afford to develop new products or services that ultimately do not succeed with customers, because the initial orientation of the product or service design or the marketing was not optimally oriented towards the customer.

The compulsory courses mentioned so far ensure that graduates can document and control economically meaningful activities that they have designed against the background of dynamic markets. However, the high intensity of competition also means that the production, i.e. of a product or service, has to be as efficient as possible. For this purpose, the Master in Management includes two further compulsory courses. The course *Production & Logistics* deals with the management of production processes and the logistical aspects of production, such as transport, inventory management, procurement, etc. The importance of these competences becomes particularly clear with the example of the project manager. A project can only be carried out as economically as possible (see above) if the production process is efficiently designed. This is also the background for the course *Management Science*, which deals with the mathematical modelling and solution of complex management problems. If a project has to be economically meaningful (see above) and if adequate information on relevant
aspects of the project is available (see above), the mathematical optimization of decisions is an elementary competence of modern managers.

In addition to the business oriented skills, graduates must also understand the economic and legal context in which the company operates. *Principles of Economics* addresses the necessary economic fundamentals. First, microeconomics is dealt with, i.e. questions concerning households, companies and government organizations and their behavior on markets. Moreover, it addresses how these actors make decisions and interact with each other. Macroeconomics, in which the economy as a whole is considered, is also discussed. This field deals with questions of economic growth, unemployment, inflation and economic policy. The *Introduction to Business Law* course provides an introduction to the basic elements of German and international business law for companies. It teaches how to apply key legal principles and how to understand their implications for companies. Project managers companies must also be able to assess (at least fundamentally) whether their actions are within the legally permissible framework and which economic conditions currently and in the future will have an impact on the project and its success.

Finally, the compulsory course *Empirical Research in Economics and Management* ensures the explicitly intended research qualification in the social science context of the graduates. The relevant research and methodological knowledge is imparted in order to carry out well-founded scientific research in the field of social sciences. This is particularly important in the Master in Management, as the students previously worked in the different subject cultures of engineering and natural sciences.

In summary, the scope of the compulsory part of the study program unfortunately restricts the freely selectable part of the study program. This consideration, however, is not only justified by the guarantee of a basic, generalist education for previously non-subject students, but from the point of view of the School of Management it is simply unavoidable. In the 3rd semester the students can selectively deepen their knowledge in the mentioned subject areas. At the TUM School of Management, students have the opportunity to select elective modules from the following five fields of business competence:

- Innovation & Entrepreneurship (IE),
- Marketing, Strategy & Leadership (MSL),
- Operation & Supply Chain Management (OSCM),
- Finance & Accounting (FA) and

All areas focus on topics that are close to the interface with engineering and the natural sciences. The research, for example, focuses on the marketing of user-generated innovations, optimization of purchasing and supply chain management, and asset management. From the specialization Economics & Policy questions from environmental economics extend the subject areas of the above mentioned interfaces. Examples for fields of interest are sustainable resource management, agriculture and food industry, forestry and energy industry. Each specialization is supervised by at least three chairs of the TUM School of Management. This gives students the opportunity to learn from different perspectives when choosing their elective modules. These take place preferably in the form of seminars, since a professional deepening
of economic-scientific contents ideally takes place through the application of theoretical knowledge to problems of operational practice under real conditions, e.g. on the basis of case studies. In practical scenarios, students develop meaningful solution strategies in order to discuss complex content-related and methodological approaches in economics. In the area of specialization, students are granted a high degree of flexibility so that they can prepare themselves for the individually preferred occupational profile. Alternatively, the 3rd semester can be completed abroad as part of the so called Mobility Option. Students have the opportunity, after prior consultation with the TUM School of Management, to complete elective modules at foreign universities and have them recognized.

In order to offer students who cannot spend an entire semester abroad the option of gaining a minimum of international experience, the elective module Advanced International Experience can be part of the 3rd semester. For these students, there are other possibilities of a stay abroad, such as completing the project study or the Master’s thesis in another country. In order to enable reflection on the contents of the module against the background of one’s own relevant international experience, a minimum stay of 60 calendar days abroad is generally required. The Advanced International Experience module is offered as an online course.

Within the 3rd semester the students can do a facultative project study. During this project they work scientifically on current questions from business and operational practice or from ongoing research projects at the interface between the economic sciences and engineering/natural sciences and apply the knowledge they gained within the previous two semesters. These projects are mostly carried out with an industrial partner. The Munich area with its large number of large companies and start-ups offers an optimal environment for the acquisition of project partners.

A project team usually consists of a group of up to five students. Special attention is paid to the intensive, performance-oriented work within the respective project team and careful supervision by at least one professor. The project study combines theory and practice. Therefore, representatives from industry and service companies accompany the study projects as mentors. The supervising chair holders and their scientific staff form the bridge to academic education and ensure a high academic quality of the partial and final results throughout the entire duration of the project by intensive supervision. The study projects should not only result in problem solutions for research or for companies, but also in networks of relationships for later entry into the professional world. The facultative project study can also be carried out abroad.

With this knowledge acquired in the third semester, the students have highly specialized knowledge that is linked to the latest findings in a field of work or research.

The Master’s program in management is completed in the 4th semester by the Master’s Thesis, which has to be completed within six months.

In order to ensure the best possible study conditions for the students, the TUM School of Management has developed corresponding study plans. Should this ideal timetable not be feasible for every student, it will be possible for him or her to make appropriate changes in the optional module by individually adapting his curriculum in order to be able to acquire the
prescribed 30 credits per semester - without impairing the logical study structure. Figure 4 illustrates the ideal course of study.

Figure 4: Ideal course of study – Master in Management

Since the Master's program in Management has already been successfully implemented, it is ensured that the modules in the basic area can be offered without overlapping.

The program is also part of the "International Master in Industrial Management (IMIM Program)", a joint master program of the Universidad Politécnica de Madrid (UPM), Politecnico di Milano (POLIMI), Heriot-Watt University in Edinburgh (HWU), Beijing Jiaotong University (BJTU) and Technical University of Munich. The IMIM students spend the first semester at UPM in Madrid, the second at POLIMI in Milan and are spread in the third semester among HWU, BJTU and TUM School of Management. Each year, the TUM School of Management admits up to 10 students of the program to the Master in Management within the framework of a double-degree degree. These students should gain competences in the fields of entrepreneurship, innovation and technology management and can also complete their master thesis at the TUM.

7. Organizational affiliation and responsibilities

The Master in Management is run entirely by TUM School of Management.

Responsibility for the Master in Management lies with the Vive Dean of Academic Affairs, the Academic Program Director, the Master’s Examination Board and the Eligibility Commission of TUM School of Management.
Program responsibility and coordination lie with the Vice Dean of Academic Affairs and the Academic Program Director of TUM School of Management. Clarification of examination-related matters and recognition of examinations (credits transfers) are carried out by the Master’s Examination Board of TUM School of Management. The Eligibility Commission is responsible for the proper implementation of the aptitude assessment procedure.

Centralized administrative tasks are carried out by the administrative departments of TUM School of Management, in particular Admissions and Program, Student Affairs and International Programs, Quality Management and Marketing departments, in consultation with the Vice Dean of Academic Affairs, the Academic Program Director and the relevant committees and commissions. Responsibilities for the various areas are shown in Table 1.

Information about the Master in Management is published on the TUM School of Management website (www.wi.tum.de/programs/master-in-management/).

Table 1: Responsibilities of different departments at TUM School of Management

<table>
<thead>
<tr>
<th>Application &amp; Program Coordination</th>
<th>Student Affairs &amp; International Programs</th>
<th>Quality Management</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Student selection (organization of application and assessment procedures)</td>
<td>• Program Management</td>
<td>• Quality management (incl. Evaluation of teaching and learning)</td>
<td>• Career Development: introduce the study program to HR of firms</td>
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<tr>
<td>• Course planning (incl. Creation of course schedules)</td>
<td>• Student Counseling (incl. information events)</td>
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<td>• Website</td>
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<tr>
<td>• Coordination of imports and exports in teaching</td>
<td>• Study Abroad (incl. coordinating/ assigning study places abroad)</td>
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<td>• Marketing material</td>
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<tr>
<td>• Examination planning</td>
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<td>• Information Events</td>
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<tr>
<td>• Adjusting and updating TUMonline (grades, lectures etc.)</td>
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<td>• Alumni Network</td>
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<tr>
<td>• Grade Management (incl. transcripts, final thesis, graduation documents, certificates and rankings)</td>
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<tr>
<td>• TUMonline-input (incl. Grade record and validation)</td>
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<tr>
<td>• Organization Examination committees</td>
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