

# Report of Validation Panel

Date of Meeting: 16<sup>th</sup> May 2016

**Named Award:** Master of Science  
**Programme Title:** Master of Science in Information Security  
**Award Type:** Master of Science  
**Award Class:** Major Award  
**NFQ Level:** 9  
**Intakes Commencing:** September 2016  
**ECTS/ACCS Credits:** 90

**Named Award:** Postgraduate Diploma  
**Programme Title:** Postgraduate Diploma in Information Security  
**Award Class:** Major Award  
**NFQ Level:** 9  
**Intakes Commencing:** September 2016  
**ECTS/ACCS Credits:** 60

## PANEL MEMBERS

Name
Dr Brian Nolan (Chairperson), Head of School of Informatics and Engineering, Institute of Technology Blanchardstown
Dr Sean Duignan, Head of Department, Computer Science & Applied Physics, School of Science & Computing, Galway-Mayo Institute of Technology
Mr Gordon Murray, Systems Administrator, Teamwork.com
Dr Ger Culley, I.T. Director, I.T. Services, University College Cork
Dr Joe Harrington, Head of School, School of Building and Civil Eng., Cork Institute of Technology
Dr Catherine Frehill, Module Moderator, Office of Registrar & Vice-President for Academic Affairs, CIT

## PROPOSING TEAM MEMBERS

Name
Mr Tim Horgan, Head, Department of Computing
Dr Sean McSweeney, Lecturer, Department of Computing
Mr Vincent Ryan, Lecturer, Department of Computing
Dr Paul Reynolds, Lecturer, Department of Physical Sciences
Mr Robert McArdle, Lecturer, Department of Computing
Ms Josephine O'Halloran, Lecturer, Department of Marketing and International Business
Ms Noreen Gubbins, Lecturer, Department of Computing
Dr Samane Abdi, Lecturer, Department of Computing

## **BACKGROUND TO THE PROPOSED PROGRAMME**

The proposal seeks validation for a Master of Science in Information Security. The programme has been designed to run in both full-time and part-time mode through online and traditional delivery. The proposal also seeks validation for a 60 credit embedded award of a Postgraduate Diploma in Science in Information Security. By developing this new level 9 Masters programme the School of Science and Informatics and the Department of Computing is designing a programme which provides graduates with an opportunity to develop expert knowledge in Information Security and thus increase the availability of skilled IT professionals to meet local and global demand in this rapidly growing sector. Graduates of the Masters programme would be ideally suited for Information Security roles in large multinationals as part of a team or as the sole Information Security expert in an SME. Extensive industry consultation was conducted to ensure the programme will produce graduates with the skills, knowledge and competencies to meet industry needs.

This proposal supports and underpins the Institution's strategic plan in a number of ways and this Masters programme responds to the strategic requirement of the Institute to further develop its role as a provider of continuing professional development opportunities, by adding to, and extending, the portfolio of programmes available to students. Applicants who hold a level 8 award from a cognate ICT discipline are eligible to apply for the MSc and embedded award. Applicants who hold a level 8 award from a non-cognate discipline with relevant experience or relevant ICT ECTS are eligible to apply. Applicants who do not hold a level 8 award but have significant industrial experience will be considered on a case by case basis.

## FINDINGS OF THE PANEL

*NOTE: In this report, the term “Requirement” is used to indicate an action or amendment which in the view of the Panel **must** be undertaken prior to commencement of the Programme. The term “Recommendation” indicates an item to which the Institute/Academic Council/Course Board should give serious consideration for implementation at an early stage and which should be the subject of ongoing monitoring.*

The Panel would like to **commend** the programme development team for the quality of the proposal. The enthusiasm of the proposers for the programme was clearly evident on the day of the validation panel itself.

The Panel has considered the documentation provided and has discussed the programme with the proposers. Based on this, the Panel has arrived at a number of Findings, Requirements and Recommendations as follows.

### 1. Programme-Level Findings

#### 1.1 NEED FOR THE PROGRAMME

**Validation Criterion: Is there a convincing need for the programme(s) with a viable level of applications?**

Overall Finding: Yes

#### 1.2 AWARD

**Validation Criterion: Are the level and type of the proposed awards appropriate?**

Overall Finding: Yes.

1.2.1 The programme designation as a Master of Science in Information Security is appropriate.

1.2.2 The proposers included the appropriate documentation for the award of Postgraduate Diploma as an exit strategy should participants in the programme not be in a position to complete the third semester which includes the project element. The programme designation as a Postgraduate Diploma in Science in Information Security is appropriate.

1.2.3 The proposers indicated in the documentation that in the future they may develop a Special Purpose or Minor Award to allow for upskilling of employees and graduates into the specialised area of Information Security. The panel **supports** the future development of this programme.

1.2.4 **Recommendation:** The panel recommends the graduate profile as described in the proposing documentation is expanded to include linkages to the programme outcomes as described in the Semester Schedules.

#### 1.3 LEARNING EXPERIENCE

**Validation Criterion: Is the learning experience of an appropriate level, standard and quality overall?**

Overall Finding: Yes

#### 1.4 PROGRAMME STRUCTURE

**Validation Criterion: Is the programme structure logical and well designed (including procedures for access, transfer and progression)?**

Overall Finding: Yes, subject to certain Requirements and Recommendations

The Programme Outcomes as proposed to the panel on 16<sup>th</sup> May 2016 are in Appendix 1. Findings, requirements and recommendations concerning individual modules (if any) are recorded in section 3 below.

**1.4.1 Requirement:** The Master of Science course schedule should include a special regulation: Learners are required to complete 90 credits of new learning.

**1.4.2 Requirement:** The Postgraduate Diploma course schedule should include a special regulation: Learners are required to complete 60 credits of new learning.

**1.4.3 Recommendation:** A detailed discussion regarding the delivery timing of COMP9039 Security Management and Law took place and the panel recommends the module should be delivered in the first semester.

**1.4.4 Recommendation:** The panel would like to view the proposed schedule for the delivery of the Masters in part-time mode.

**1.4.5 Requirement:** The entry requirements for applicants from non-cognate disciplines should be clarified and included in the documentation.

## 1.5 PROGRAMME MANAGEMENT

**Validation Criterion: Are the programme management structures adequate?**

Overall Finding: Yes, subject to certain Requirements.

**1.5.1 Requirement:** A Research Project handbook should be developed to include e.g. project guidelines, indicative project milestones, research and report writing guidelines. The panel is aware that such guidelines exist for the MSc in Cloud Computing and wish to view these guidelines while the specific guidelines are under development for the MSc in Information Security.

## 1.6 RESOURCE REQUIREMENTS

**Validation Criterion: Are the resource requirements reasonable?**

Overall Finding: Yes.

## 1.7 IMPACT ON THE INSTITUTE

**Validation Criterion: Will the impact of the programme on the Institute be positive?**

Overall Finding: Yes

## 2. Module-Level Findings

The Panel notes that 8 modules on the proposed programme as presented to the panel are new modules. The panel was informed that the new draft modules have been subject to internal scrutiny by the CIT module moderator (Ms Anne Crowley).

In exercising its brief to consider the overall standard and appropriateness of modules, the Panel wishes to add the following findings, requirements and recommendations.

### 2.1 ALL MODULES

**2.1.1 Requirement:** Any revisions to Module Descriptors or Semester Schedules made to address the recommendations and requirements in this report require sign-off from the CIT Module Moderator and the Registrar's Office prior to approval by the CIT Academic Council.

**2.1.2 Requirement:** Reading lists including journals, online resources and texts should be updated to ensure currency of content.

**2.1.3 Requirement:** The coursework breakdown across the module descriptors should be reviewed and revised where necessary to clarify the actual assessment deliverables.

**2.1.4 Requirement:** The learning outcomes across the module descriptors should be reviewed, revised and where necessary combined to reduce duplication within modules.

**2.1.5 Requirement:** Where applicable the module recommendation section of the module descriptions should be completed.

## 2.2. MODULES

All requirements regarding modules are listed in section 2.1

## Other Findings

At the validation meeting the panel were very supportive of the programme due to the constructive engagement during the panel sessions. The panel supported and encouraged further development of the programme in line with discussions, requirements and recommendations made by the panel.

The panel wishes to commend the staff and management on their energy, teamwork and enthusiasm and dedication in putting together the programme proposal.

The additional documentation and module revisions have been reviewed and the updated submission meets all the requirements as set out previously. The approved semester schedules are shown in Appendix 3.

## 4. Conclusion

Based on the above findings, the Panel has arrived at the following conclusions:

- The Master of Science in Information Security and the Postgraduate Diploma in Science in Information Security meet the required standards for an award in the Science field of study at Level 9 of the National Framework of Qualifications.
- The Programmes meet the criteria for validation of new programmes adopted by the Academic Council of Cork Institute of Technology.

The Panel therefore recommends that the two Programmes be validated for five academic years, or until the next programmatic review, whichever is soonest, subject to implementation of the Requirements above, and with due regard to the Recommendations made.

Implementation of Requirements and Recommendations
Requiring Registrar's Office Sign-Off:
1.2.4 Recommendation: Complete
1.4.1 Requirement: Complete
1.4.2 Requirement: Complete
1.4.3 Recommendation: Complete – due to part-time nature of delivery this recommendation will be met every second year
1.4.4 Recommendation: Complete

<b>1.4.5 Requirement:</b> Complete
<b>1.5.1 Requirement:</b> Complete
<b>2.1.1 Requirement:</b> Complete
<b>2.1.2 Requirement:</b> Complete
<b>2.1.3 Requirement:</b> Complete
<b>2.1.4 Requirement:</b> Complete
<b>2.1.5 Requirement:</b> Complete

## APPENDIX 1 – Proposed Programme Outcomes – Master of Science in Information Security

### Programme Outcomes

Upon successful completion of this programme the graduate will be able to demonstrate... :

PO1	<b>Knowledge - Breadth</b>	
	(a)	A mastery of advanced theoretical and practical knowledge and skills relevant to Information Security, including Cryptography, Security Management, laws relating to data protection and computer crime legislation, Network Security, Network Forensics, Incident Response, Digital Forensics, Penetration Testing, Web App Security and Scripting. The student will also be able to master other specialist areas of Information Security by taking electives that match their interests.
PO2	<b>Knowledge - Kind</b>	
	(a)	A capacity to critically appraise developments in a wide range of technologies in Information Security; discuss current challenges and research activities in these areas; apply research methodologies to tackling research problems.
PO3	<b>Skill - Range</b>	
	(a)	An ability to select and apply standard research tools and techniques of inquiry, forming a solid foundation for pursuing further research; critically evaluate design and implementation issues in Information Security as a result of the research undertaken; exhibit research capability in a number of cutting edge areas in the fields of Information Security; complete a major research project.
PO4	<b>Skill - Selectivity</b>	
	(a)	Develop new research skills to plan and implement a research project using emerging technologies to solve a challenging problem requiring an appropriately high level of technical expertise in the area of Information Security.
PO5	<b>Competence - Context</b>	
	(a)	Analyse and document measures to address risks and weaknesses in Information Security infrastructures; develop guidelines regarding professional and ethical practices in the exploitation of computer technology; design and implement a solution that requires significant preliminary research for novel and unfamiliar situations.
PO6	<b>Competence - Role</b>	
	(a)	Develop the technical competence required for the role of senior security officer for medium/large organizations; assume the role of technical lead of a project of significant complexity related to Information Security.
PO7	<b>Competence - Learning to Learn</b>	
	(a)	An ability to reflect on their strengths and weaknesses and how they will involve continuing professional development in their personal development plan. Develop expertise knowledge of the Information Security landscape and anticipate skills shortages to direct continuing professional development.
PO8	<b>Competence - Insight</b>	
	(a)	A critical appreciation of the design issues in developing an Information Security infrastructure, taking into account the environment and context in which it is being applied. Expert knowledge of the emerging threats and countermeasures in the field and the ability to anticipate information security needs.

## Proposed Programme Outcomes – Postgraduate Diploma in Science in Information Security

### Programme Outcomes

Upon successful completion of this programme the graduate will be able to demonstrate... :

PO1	<b>Knowledge - Breadth</b>	
	(a)	A mastery of advanced theoretical and practical knowledge and skills relevant to Information Security, including Cryptography, Security Management, laws relating to data protection and computer crime legislation, Network Security, Network Forensics, Incident Response, Digital Forensics, Penetration Testing, Web App Security and Scripting. The student will also be able to master other specialist areas of Information Security by taking electives that match their interests.
PO2	<b>Knowledge - Kind</b>	
	(a)	A capacity to critically appraise developments in a wide range of technologies in Information Security; discuss current challenges and research activities in these areas.
PO3	<b>Skill - Range</b>	
	(a)	An ability to critically evaluate design and implementation issues in Information Security as a result of the research undertaken; exhibit research capability in a number of cutting edge areas in the fields of Information Security.
PO4	<b>Skill - Selectivity</b>	
	(a)	An ability to identify and analyse emerging technologies with the potential to solve significant potential challenges in Information Security.
PO5	<b>Competence - Context</b>	
	(a)	Analyse and document measures to address risks and weaknesses in Information Security infrastructures; develop guidelines regarding professional and ethical practices in the exploitation of computer technology.
PO6	<b>Competence - Role</b>	
	(a)	Develop the technical competence required for the role of senior security officer for medium/large organizations.
PO7	<b>Competence - Learning to Learn</b>	
	(a)	An ability to reflect on their strengths and weaknesses and how they will involve continuing professional development in their personal development plan. Develop expertise knowledge of the Information Security landscape and anticipate skills shortages to direct continuing professional development.
PO8	<b>Competence - Insight</b>	
	(a)	A critical appreciation of the design issues in developing an Information Security infrastructure, taking into account the environment and context in which it is being applied. Expert knowledge of the emerging threats and countermeasures in the field and the ability to anticipate information security needs.



## Appendix 2 – Proposed Semester Schedules: Master of Science in Information Security

### Stage 1 / Semester 1

Elective Regulation  
Students will choose one 5 credit elective

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
No Code Yet	Network Security & Forensics (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9038	Incident Response & Forensics (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP8037	Scripting for System Admins (Approved)	TIM HORGAN	Advanced	5.0	4.00	4.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9033	Data Analytics (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9035	Cloud Security (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
No Code Yet	Malware Investigations (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
No Code Yet	Embedded Security (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0

Stage 1 / Semester 2

Elective Regulation  
Students will choose one 5 credit elective

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9039	Security Management and Law (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
No Code Yet	Offensive Security (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9012	Applied Cryptography (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
No Code Yet	Malware Reverse Engineering (Draft)	TIM HORGAN	Expert	5.0	2.00	3.00	100.0	0.0
No Code Yet	Threat Intelligence (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9031	Software Security (Draft)	TIM HORGAN	Advanced	5.0	4.00	4.00	40.0	60.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 1 / Semester 3

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9021	Computing Research Project (Draft)	TIM HORGAN	Expert	30.0	0.00	1.00	100.0	0.0

## Postgraduate Diploma in Science in Information Security

Stage 1 / Semester 1

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
No Code Yet	Network Security & Forensics (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9038	Incident Response & Forensics (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP8037	Scripting for System Admins (Approved)	TIM HORGAN	Advanced	5.0	4.00	4.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
No Code Yet	Malware Investigations (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9035	Cloud Security (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9033	Data Analytics (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
No Code Yet	Embedded Security (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0

Stage 1 / Semester 2

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9039	Security Management and Law (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
No Code Yet	Offensive Security (Draft)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9012	Applied Cryptography (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9031	Software Security (Draft)	TIM HORGAN	Advanced	5.0	4.00	4.00	40.0	60.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0
No Code Yet	Threat Intelligence (Draft)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
No Code Yet	Malware Reverse Engineering (Draft)	TIM HORGAN	Expert	5.0	2.00	3.00	100.0	0.0

## Appendix 3 Approved Programme Schedules – Master of Science in Information Security CR\_KINSE\_9

### Semester Schedules

#### Stage 1 / Semester 1

##### Elective Regulation

Learners will complete two 5 credit electives during the programme of study.

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9046	Network Security & Forensics (Approved)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9038	Incident Response & Forensics (Approved)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP8037	Scripting for System Admins (Approved)	TIM HORGAN	Advanced	5.0	4.00	4.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9033	Data Analytics (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9035	Cloud Security (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9047	Malware Investigations (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9049	Embedded Security (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0

Stage 1 / Semester 2

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9039	Security Management and Law <i>(Approved)</i>	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9050	Offensive Security <i>(Approved)</i>	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9012	Applied Cryptography <i>(Approved)</i>	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9048	Malware Reverse Engineering <i>(Approved)</i>	TIM HORGAN	Expert	5.0	2.00	3.00	100.0	0.0
COMP9051	Threat Intelligence <i>(Approved)</i>	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9031	Software Security <i>(Approved)</i>	TIM HORGAN	Advanced	5.0	4.00	4.00	100.0	0.0
FREE6001	Free Choice Module <i>(Approved)</i>	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 1 / Semester 3

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9021	Computing Research Project <i>(Approved)</i>	TIM HORGAN	Expert	30.0	1.00	1.00	100.0	0.0

## Postgraduate Diploma in Science in Information Security

### Semester Schedules

#### Stage 1 / Semester 1

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9046	Network Security & Forensics (Approved)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9038	Incident Response & Forensics (Approved)	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP8037	Scripting for System Admins (Approved)	TIM HORGAN	Advanced	5.0	4.00	4.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9047	Malware Investigations (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9035	Cloud Security (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9033	Data Analytics (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9049	Embedded Security (Approved)	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0

Stage 1 / Semester 2

Mandatory								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9039	Security Management and Law <i>(Approved)</i>	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9050	Offensive Security <i>(Approved)</i>	TIM HORGAN	Expert	10.0	6.00	6.00	100.0	0.0
COMP9012	Applied Cryptography <i>(Approved)</i>	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
Elective								
Mod Code	Module Title	Co-ordinator	Level	Credits	FT Contact Hours	PT Contact Hours	Course Work	Formal Exam
COMP9031	Software Security <i>(Approved)</i>	TIM HORGAN	Advanced	5.0	4.00	4.00	100.0	0.0
FREE6001	Free Choice Module <i>(Approved)</i>	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0
COMP9051	Threat Intelligence <i>(Approved)</i>	TIM HORGAN	Expert	5.0	3.00	3.00	100.0	0.0
COMP9048	Malware Reverse Engineering <i>(Approved)</i>	TIM HORGAN	Expert	5.0	2.00	3.00	100.0	0.0